Amateur Radio

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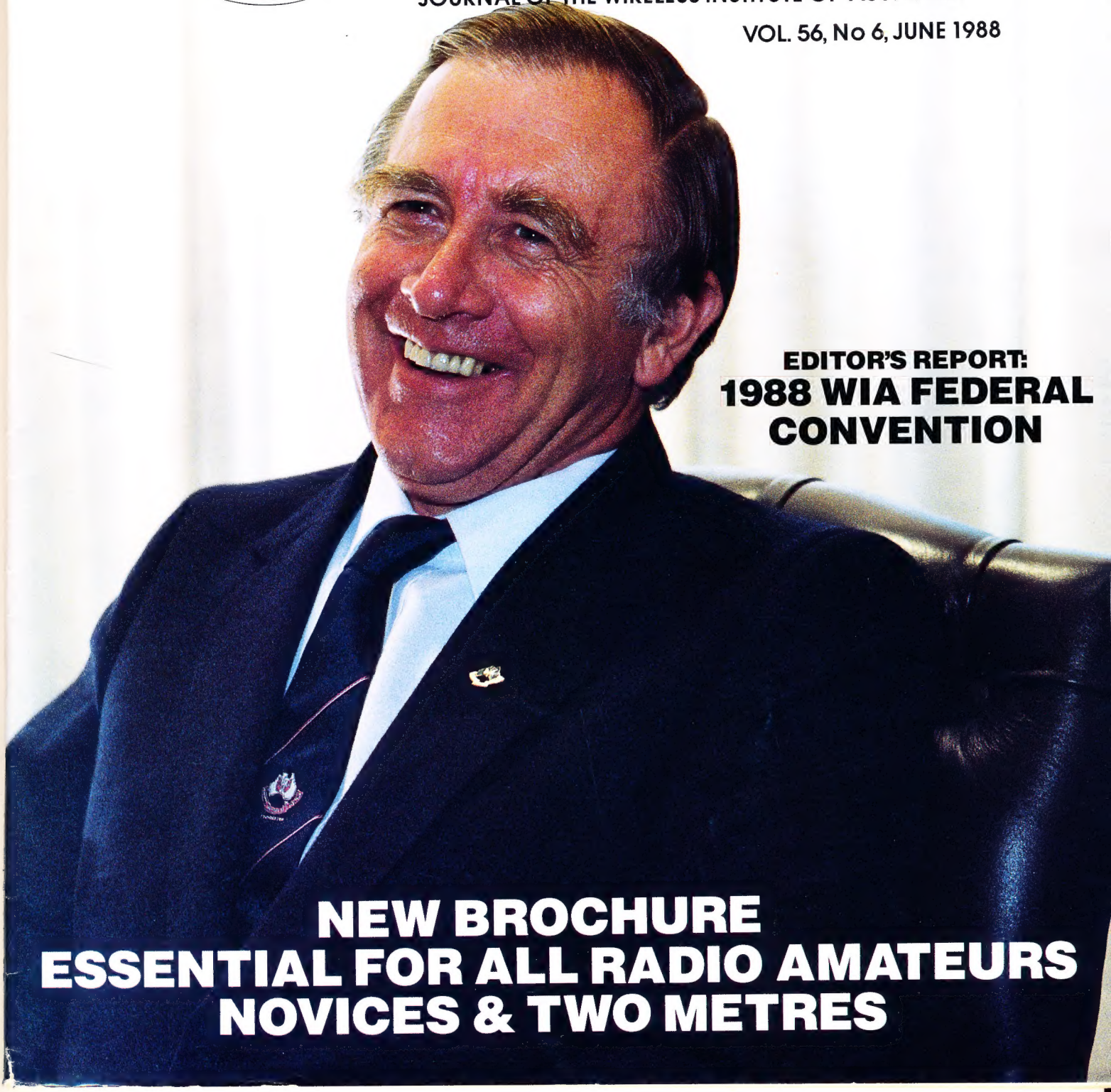

EDITOR'S REPORT:
1988 WIA FEDERAL CONVENTION

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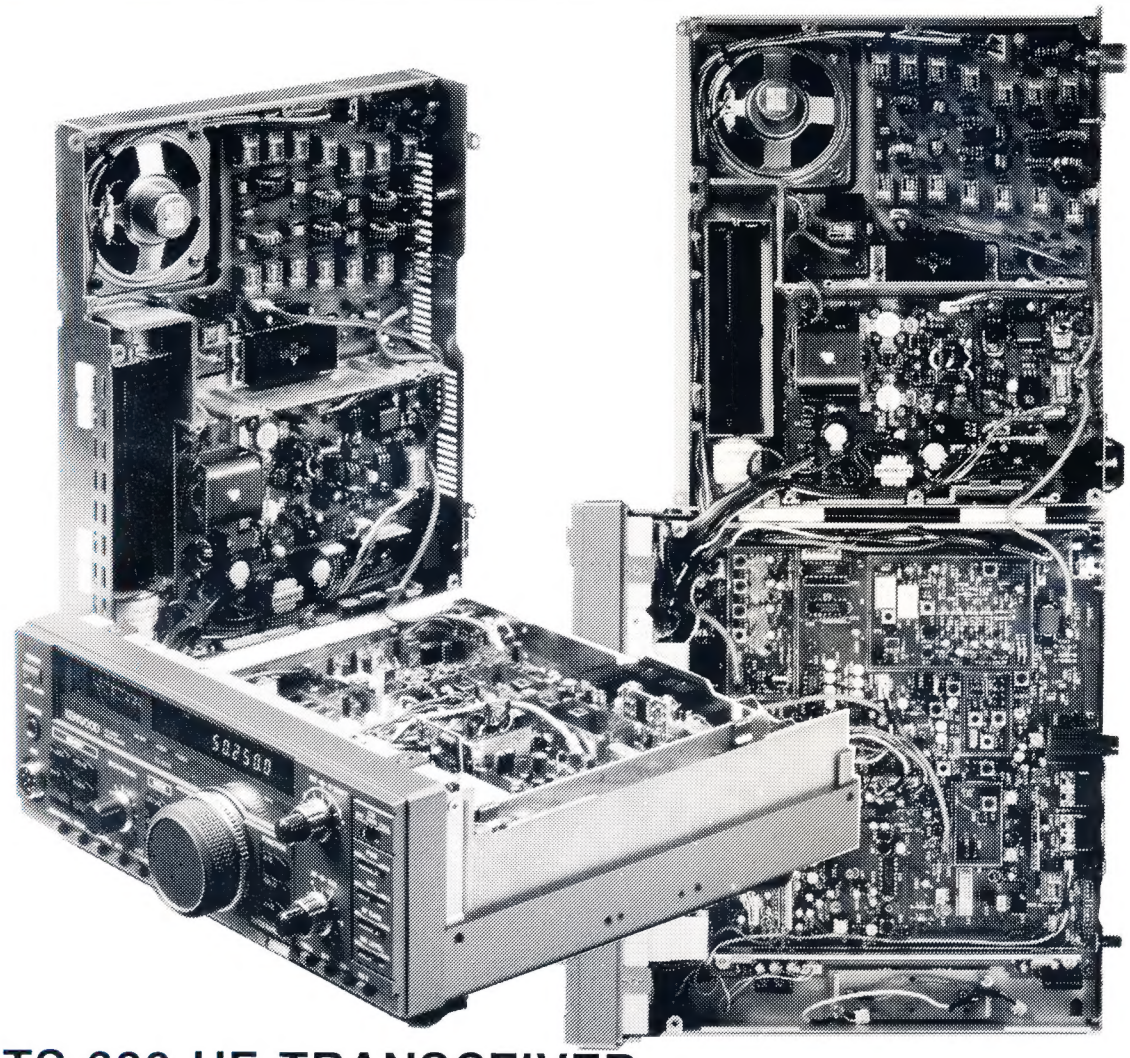

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Amateur Radio

—Photograph courtesy Ken McLachlan VK3AH

Front Cover: David Wardlaw VK3ADW, Retiring WIA Federal President. (See page 20).

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All copy for inclusion in the August 1988 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, June 20, 1988.

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EDITOR

BILL RICE* VK3ABP

NEWS EDITOR

JIM LINTON VK3PC

TECHNICAL EDITORS

PETER GAMBLE* VK3YRP
PETER GIBSON* VK3AZL
EVAN JARMAN* VK3ANI
DOUG MCARTHUR* VK3UM
GIL SONES* VK3AUI

CONTRIBUTING EDITORS

Frank Beech VK7BC
Brenda Edmonds VK3KT
Ron Fisher* VK3OM
Gilbert Griffith VK3CQ
Ken Hall VK5AKH
Roy Hartkopf VK3AOH
Robin Harwood VK7RH
Ron Henderson VK1RH
Colin Hurst VK5HI
Eric Jamieson VK5LP
Bill Martin VK2COP
Hans Ruckert VK2AOU

DRAFTING

Liz Kline
Ken Kline

***Members of Publications Committee**

Inquiries and material to:
The Editor,
PO Box 300,
Caulfield South, Vic. 3162.

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Editor's Comment

ANTENNAS AND THINGS

This month has been no different from usual in that I have had to think for a long time as to what might be a good topic for "Comment". It has actually been harder than usual, because at the time of writing (April 17) the big item on everyone's mind has been the Federal Convention. As you read in the April issue, big things are expected of the 52nd Convention. But by the time you read this the Convention will be history! Some of that history is in fact elsewhere in this issue, where by a special stop-press, never-to-be-repeated arrangement you may read my account of the discussions to take place next weekend, which was five weeks ago by the time you read this! Confused? So am I! Obviously, for editorial purposes I must talk about something which evolves more slowly.

One thing which has been keeping me very busy for the last week or two has been antenna construction (of course, as this month's bylines show, the magazine has kept me busy too!). Until last November, my only DX type antenna was a somewhat decrepit version of a VK2ABQ beam, just for 20 metres. That, plus an 80 metre dipole with tuned feeders, and a smattering of six metres, two metres and 70 cm Yagis, comprised the VK3ABP backyard antenna farm.

The 2ABQ beam used bamboo radials which had seen better days. One had been replaced with plastic tubing, and the three bamboos were patched and splinted. They had been home-grown, but to avoid the yard evolving into a bamboo jungle we had dug them out, roots and all, some years before. Pride of place in the yard was the 30 year old weeping willow. We didn't know its tremendous trunk was rotten at the base! On November 23, 1987, there was a strong north wind, and the willow fell over, demolishing all the HF antennas in a few seconds!

As some of you may know, I don't have a lot of time for working DX on 20, so there was no hurry about fixing the 2ABQ. After clearing away most of the horizontal willow, the 80 metre wire was re-strung. We went to New Zealand for a month. Time rushed on. But suddenly a DX incentive appeared. Ron VK3OM, went to North America for a month, and I needed some antenna gain on 20 and 15 metres to keep scheds. To cut a long story short, not only have I once again demonstrated that the 2ABQ is a jolly fine antenna, but I have also realised that there must be almost as many ways to build one as there are people to do it! Materials, wire attachment, even type of wire. And rigging procedure! Without some careful forethought you can finish up with an impressively useless airborne tangle!

There has been a good deal published by VK2ABQ and others (notably G3VA) since the first description in *Electronics Australia* back in October 1973. But I have yet to see an article which covers in simple practical detail, how to build it, how to erect it, and how many alternative ways there are of going about it. What is its feed-point impedance in one, two or three band versions? Has anyone looked at its radiation patterns? What gain can one really expect from it? Unless I'm much mistaken, we could publish a new and different article on the 2ABQ every month for a year. I don't have time at present, but some of those articles may be half-written already by those of you who enjoy playing with antennas. Do I guess right? Let's see!

Bill Rice VK3ABP
Editor

VNG USERS FIGHT BACK

Attempts are being made to revive Australia's national frequency and time signal service, VNG. The service previously operated by Telecom was closed on October 1, 1987, for financial reasons.

But a group calling itself the VNG Users Consortium vow VNG will be back on air, either through private or government funding.

It estimates VNG would cost less than $40 000 a year to run. A submission is being prepared to the government for funding.

The VNG Users Consortium was formed after nearly 100 VNG users met last December and resolved that the important service should be revived.

Further information can be obtained from the consortium's secretary, Dr Marion Leiba, Earthquake Seismoligist, 26 Fimister Circuit, Kambah, ACT. 2902.

52ND FEDERAL CONVENTION REPORT

Novices get FM 146 — 148 MHz

DOTC Releases Brochure on Licence Conditions

WIA Restructure Evolutionary, not Revolutionary

Announcements regarding a Novice VHF allocation, and release of the licence conditions brochure, were made by the DOTC representative Mr David Hunt at the WIA 52nd Federal Convention, held over the Anzac Day weekend. Also, after hours of debate on the future of the Institute, the very democratic decision was made to hasten slowly and seek members' views regarding the present Divisional versus a more centralised Federal administration.

In formally opening the Convention on Saturday morning, the Federal President, David Wardlaw VK3ADW, referred to the difficulties which had been experienced by Executive during the year. He hoped that this Convention would improve the situation, and make possible increases in membership and extension of services to members. He also made special reference to the excellent relationship we have continued to enjoy with DOC (later DOTC) throughout the year.

The formalities of receiving and adopting the minutes of the 1987 Convention, the profit and loss and balance sheets and the auditors' report were supported unanimously. David then moved on to presentation of the President's Report. He made particular reference to the loss of three Executive members during the year. Michael Owen VK3KI, has been sent to London by his firm for three years, Allan Foxcroft VK3AE, has indicated his intention to retire at this Convention, and Ross Burstal VK3CRB, resigned due to health problems towards the end of 1987. Among questions which David was asked were what was the present position regarding examination devolvement (Executive has applied for accreditation) and Customs duty on imported transceivers (we are negotiating to change the mechanism of certification).

INTERNATIONAL AMATEUR RADIO UNION (IARU)

The President then presented his second report, this time in his capacity as WIA delegate to the IARU. He announced that there would probably be a World Administrative Radio Conference (WARC) in 1992. There is definitely to be a Region 3 conference of the IARU at Seoul, South Korea, in October this year. He also welcomed our visitors from New Zealand, Terry Carrell ZL3QL, President of NZART, and Alan Wallace ZL1AMW, and invited them to contribute to the discussions whenever they thought a New Zealand viewpoint would be appropriate. David also reiterated the familiar theme of world-wide commercial pressure for spectrum space and the necessity for continuing defence of amateur frequency allocations. Peter Gamble VK3YRP, remarked that spectrum pressure tends to be cyclic. Once it was strongest in the HF area until relieved first by cables and then by satellites. A few years ago microwave towers were being built on every hilltop, but now the big expansion is in fibre-optics.

The acting Federal Treasurer, Bill Roper VK3ARZ, then presented his report. He described the almost-balanced budget for 1987 as very gratifying in view of earlier indications that there could be a serious over-run. He has introduced a comprehensive computer-based analysis of all financial factors into management of the Federal Office. He mentioned the need for increased advertising in *Amateur Radio*, and suggested that Councillors should seek advertisers in their home States. The size of the market in a State such as Queensland was queried by Guy Minter VK4ZXZ, using the phrase "branch office state", but Bill was of the opinion that it is still possible to deal with branch offices! He hoped soon to be able to distribute a "how to do it" brochure on selling advertising space.

Your Editor then gave a brief introduction to the Publications Committee report, the main point noted being that the Committee's terms of reference have been broadened to give it more direct financial responsibility. There were questions on payment for columnists (and Editors?) (we cannot afford it yet), the cost of returning to colour covers (which will give potential advertisers a better impression, and perhaps attract potential members, in both cases helping to offset costs), and the likelihood of a 1988 Call Book. (Mr David Hunt, from DOTC, announced the next day that the call book contract would go to the WIA, so there should be one this year). There was considerable discussion about magazine finances, mainly involving VK4ZXZ and VK3ARZ.

Peter Gamble, as chairman of the Federal Technical Advisory Committee, presented the FTAC report.
Peter commented on the repeater and beacon situation and the loss of the Telememo facility which had been used to link FTAC members in the various States. The question of 23 cm repeaters in VK4 and VK5, not in accordance with the WIA band plan, was also mentioned, as was the additional Telecom charge incurred by those who installed approved phone patch line isolating units.

Allan Foxcroft introduced his report as Standards Co-ordinator by stating his intention to retire. He was disappointed that no successor to him had yet been found, and spoke vigorously of the importance of standards, particularly on appliance immunity to RFI. In the following discussion wireless video transmitters (WVTs) and cordless telephones were quoted as examples of interference to the Amateur Service which were now under control because of the issue of relevant DOTC standards.

WICEN

The Federal WICEN Co-ordinator, Ron Henderson VK1RH, said 1987 had been a quiet year for him, but WICEN had already been involved in a number of Bicentennial activities and had proved vital to the running of the Castrol World Rally.

The Intruder Watch report, from Bill Martin VK2COP, was noted and discussed. Bill has given notice of intention to resign, and the VK7 IW Co-ordinator, Robin Harwood VK7RH, had also resigned. Both will be difficult to replace. All those present agreed on the value of IW, but also that it has always been difficult to involve more than a few in its operation. VK4 Division has some hope of finding another Federal Co-ordinator.

Reports were accepted from the previous Contest Manager, Ian Hunt VK5QX, and the current manager, Frank Beech VK7BC. Frank's report included recommendations about the four main contests. Councillors had some differences of opinions regarding the recommendations, and a Working Party was established to review them. When the Working Party reported its actions on Saturday evening, the recommendations had been revised as follows:

1. That the John Moyle Memorial Field Day and the NZART Field Day be coincident, and their rules mutually compatible.

2. That the JMMFD be on all bands as at present, not split into separate HF and VHF sections as had been proposed.

3. That multipliers be adjusted as seen fit by the Contest Manager.

4. Entrants in the JMMFD on VHF and higher bands be encouraged to participate in the Ross Hull Contest also.

Ian's report referred mainly to delays in the presentation of the Contest Championship trophies. These delays will be investigated by Executive.

Reports were also received from the Awards Manager, Ken Hall VK5AKH, and the Federal QSL Manager, Neil Penfold VK6NE, who is also the VK6 Federal Councillor. The Federal Education Officer, Brenda Edmonds VK3KT, presented her report, which was mainly on the topics of the recently completed Novice Study Guide, and the progress of examination devolvement. The latter was discussed extensively. Executive and some Divisions have applied to DOTC for accreditation as examining bodies, and the VK2 Division has built up a bank of 1000 examination questions.

AGENDA ITEMS

Early on Saturday afternoon attention was transferred to the agenda items, of which 32 were listed. The first to be tackled was that the six reports and 13 recommendations of the Future of Amateur Radio Working Party (as published in AR between September 1987 and April 1988) should be reviewed and adopted. Some disagreements emerged about the wording of several of the recommendations, particularly about the need or otherwise to retain Morse code as a qualification for HF operators. This was debated for over an hour, and it was over three hours before all the recommendations had been considered. Re-wording of some was placed in the hands of a Working Party. The Convention split up into working parties from about 5 pm. The party responsible for finance spent nearly two hours reviewing the 1989 Budget.

One report notable by its absence was that of the Federal Historian. No successor has yet been found to the late Max Hull VK3ZS, who died in July 1987. On the motion of Alan Hawes VK1WX, the Convention observed one minute's silence in memory of Max.

The four reports which remained were then AMSAT, Graham Ratcliff VK5AGR, Videotape, John Ingham VK5KG, the Federal Tape and the Federal Office, the latter two being presented by Bill Roper. Some of those present, and probably most members, were unaware of the difficulties under which the office has laboured during the year, due to health problems of one kind or another affecting the three office managers over the period, Tony Heawood, Earl Russell and Ann McCurdy.

RE-STRUCTURING

The remainder of Saturday night was devoted to the two constitutional motions which had been given considerable publicity over the previous month. Both proposed by VK3, these were:

a. To establish machinery for a poll of all members, and

b. To make use of such a poll to obtain members' views on ways in which the Institute's structure might be modified.

Since the latter motion itself called for a poll, the other was redundant and lapsed without a seconder. The re-structuring motion was eventually withdrawn and replaced by a motion arising, in which the wording was substantially revised. One of the most impressive speakers in this debate was George Brzostowski VK1GB, whose main point was that changing structure alone would have little effect if the organisation's problems were caused by people.

Effectively, the result of all this was that while re-structuring of the WIA may eventuate, it will take place only with a great deal of input from the membership, and will occur slowly rather than quickly.

The first part of Sunday morning's activities drew parallels between a 1987 Convention motion, in which an extensive review of the Institute's structure and functions was called for, and the 1988 re-structuring motion. The two are closely related, and the redrafted 1988 motion incorporates those parts of the 1987 motion not yet implemented.

A motion was discussed to review the accepted band plans in preparation for the IARU Region 3 Conference in October. This was passed with a few minor additions to the policy list.

DOTC VISITORS

The President introduced Mr John McKendry, Assistant Secretary, Operations, and Mr David Hunt, Manager, Regulatory, of the communications element of the Department of Transport and Communications. Mr McKendry began his address by outlining the profound changes in the departmental organisation which have taken place over the last 12 months. The previous Departments of Communications, Transport and Aviation had been amalgamated in July 1987, and there were subsequent internal re-arrangements. The present Government, in moving towards more and more devolvement and deregulation, was following a world-wide trend.

Passing on to more directly radio-related matters, Mr McKendry referred to the problems involved in interference situations, particularly in suburban locations. He made it clear that there can be situations in which an amateur station is not guilty of any technical or legal deficiency, but will still have to reach some kind of compromise to satisfy the neighbours. Amateurs can still expect co-operation from the Department towards finding the best solution (usually technical) but "people will be people!"

Mr McKendry then referred to the demand for spectrum allocations, and the difficulty of justifying some amateur segments in the face of commercial pressure, particularly in Eastern bloc and/or developing countries. He also mentioned the next WARC (perhaps in 1992) and

advised the Amateur Service to "get their act together, get in early and establish their ground!" In the lengthy question time which followed, VK1WX asked about the progress of interference immunity standards. Mr McKendry agreed that such standards were needed for many devices, not only domestic appliances. There are economic limits as to how immune an appliance can be made, and the Department is attempting to introduce requirements which are reasonable and balanced. Each case is judged on its merits.

VK3AE queried whether the Department was in fact lagging somewhat in the drafting of standards, and could the WIA do anything to help? In reply, Mr McKendry admitted there were delays, partly due to the proliferation of susceptible devices and the length of the necessary consultative programs, but also due to continuing erosion of the Department's resources.

Bruce Hedland-Thomas VK6OO, referred to statistics from the Western Australian branch of DOTC showing that of 20 000 interference complaints only seven involved amateurs, and only two of these were actually at fault. Nevertheless, he himself was suffering severe power line interference to television reception and wished the electricity authority could be threatened with shutdown! Mr McKendry emphasised that of course an essential service does take priority over a hobby. VK1GB commented from a legal viewpoint about nuisance legislation, cost of lawyers, standards, consumer protection, and need for compromise between conflicting parties.

The President made reference to amateur bands which are shared with other services. In some cases the amateur preference might be for a narrower, but exclusive, band. Would DOTC like to comment? In reply, Mr McKendry thought such adjustments might be possible on a domestic basis, but international agreement would be unlikely. Comments were made on this and related topics by VKs 3YRP, 7PF and 4ZXZ. Mr McKendry concluded by remarking that spectrum management was a rapidly changing field, and handed over to his colleague, Mr David Hunt.

Mr Hunt began by thanking the WIA for the support it had given the Department in a number of regulatory areas. Examination devolvement, handbook preparation, licensing and third party traffic conditions were all areas which placed heavy demands on DOTC's limited resources. Negotiation with the WIA is more productive than with individuals, he said. Examination devolvement was on target for June 1. Rules have been established for international third party traffic. Temporary international agreements can be arranged quickly, but must be requested formally.

NOVICES AND LICENCES

On the subject of Novice access to the two-metre band, Mr Hunt said a decision had now been reached. There had been a great deal of discussion, but most viewpoints were now known. It appeared that any decision would upset someone! He was therefore pleased to announce that, *effective from June 1, Novices were permitted to use FM voice between 146 and 148 MHz with an output power of up to 10 watts.*

As regarded the future amateur use of 576-585 MHz, Mr Hunt was less definite. It is hoped that a UHF television channel can be provided as a substitute, but almost certainly not the same channel in different areas. Whether a channel is available anywhere cannot be guaranteed. On a different topic, the new free brochure on licence conditions, partially replacing the old regulations handbook, will be available from June 1. (A review of the brochure is published elsewhere in this issue).

The question time which followed Mr Hunt's address covered a wide area of topics and involved numerous questioners. Some queries were about licensees' obligations in interference cases (depends on particular case) and legality of Novice on two-metre repeater being relayed on 70 centimetres where this used as a link (needs investigation). (This was legalised by a change of wording later. Ed)

There was an extensive discussion about conditions and definitions applying to third party traffic, both in Australia and as currently understood in New Zealand. This has become a much more complex question with the advent of bulletin boards, mailboxes and packet systems, and will need to be discussed at the IARU Region 3 Conference.

Another point raised for clarification by David Hunt was whether amateurs requested by DOTC to cease transmissions indefinitely have any legal recourse. They have, to the Administrative Appeals Tribunal, but it is a long and costly process. There was some further discussion about "difficult" interference cases, and then an announcement by Mr Hunt that the "other party" who had sought the Call Book contract had now withdrawn, leaving the way clear for a 1988 Call Book on terms soon to be decided.

The President thanked Messrs McKendry and Hunt for "giving up" their Sunday morning to the WIA, and described the discussions as very helpful. Some appropriate mementos were presented to them by VK4ZXZ and ZL3QL, and the Convention reverted to agenda items at midday.

BACK TO BUSINESS

Between midday on Sunday and the close of the Convention at 2.30 pm on Monday, 39 items of business were dealt with. Of these, 30 were listed agenda items. Some took little time, as seven lapsed without a seconder and seven were withdrawn. Two were absorbed into others. There were also recommendations from four reports, two new motions and three statutory actions, ie to elect the Executive, accept the Budget, and fix the date and venue of the next Convention.

Some of the more interesting results of all this discussion were:

a. The 13 recommendations of the Future of Amateur Radio Working Party were accepted in amended form. One of these proposes a new licence grade structure which removes an anomaly in K-call privileges. Accordingly, a VK2 motion requesting negotiation to remove the anomaly became unnecessary and was withdrawn.

b. The annual reports from all office-bearers are to be published in AR. As many of these are very long, abbreviated synopses will suffice.

c. On the subject of third party traffic, negotiations to take place to restore earlier definition regarding repeaters and bulletin boards. In general, reaffirm IARU (1985) and WIA (1984) policies.

d. Packet radio above 14.100 MHz. Support present VK band plan, and IARU 1987 policy.

e. Preparations to begin immediately for a WIA delegation to the IARU Region 3 Conference, Seoul October 1988. Delegates to be VK3ADW and VK1RH.

f. The new President is Peter Gamble VK3YRP and Vice-President, Ron Henderson VK1RH. Other Executive members are David Wardlaw VK3ADW (IARU Representative), Bill Rice VK3ABP (Editor), Brenda Edmonds VK3KT (Education), George Brzostowski VK1GB, Ray Roche VK1ZJR, Peter Page VK2APP and Bill Wardrop VK5AWM. Because of the number of non-VK3 members, the full Executive will only meet quarterly (in Melbourne).

g. A special general meeting of Council (possibly by tele-conference) will be held in August to review both Executive performance (in view of its decentralisation) and preparations for the IARU Region 3 Conference.

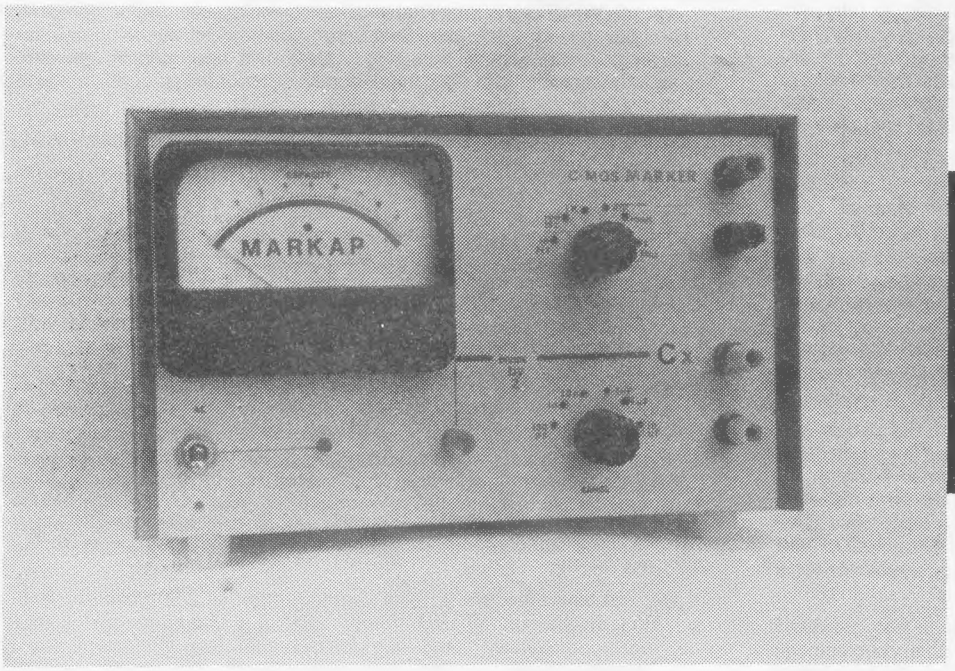
—Report compiled by Bill Rice VK3ABP

One of David's final duties as Federal President of the WIA was to present the RD Trophy to the VK4 Division — the winning Division for 1987. Guy VK4ZXZ, VK4 Federal Councillor, accepted the Trophy on behalf of the Division.

—Photograph courtesy Barrie Bunning

INTRODUCING THE "MARKAP"

Ken Kimberley VK2PY
21 Nicoll Street, Roselands, NSW. 2196



This unit should become a useful addition to any amateur's shack. Readers are referred to an earlier article in AR dealing with a capacity measuring module (October 87).

This device was designed to go with the author's Square Wave Generator (AR November 1986), and, as such, performed very well indeed. However, it was not long before it became apparent that the "umbilical" cord between them was an annoyance.

Hence, it was decided to develop a free-standing unit which ultimately became the *Markap.* Several factors, apart from the above, influenced this decision. One being that independent use of the two units would be advantageous, and another, that the reader may not have access to a suitable signal source.

Would the *Practical Wireless* version be used, after all? No! Why not? For one thing, this design used six multi-turn trimpots; ie one for each range, thus making the "set up" very tricky. Also, the author has always been a little reticent when it comes to using potentiometers to set so many ranges. Experience has shown that instabilities may arise at future time due to mechanical design shortcomings.

CAPACITANCE METER BASIS

A revision of the relevant part of the previous article concerning the operating theory, etc, would now be appropriate. The idea here is not unlike the common ohmeter and *Ohms Law.* It goes something like this:

"For a given voltage and frequency, the current through a capacitor is indirectly proportional to its capacitance." So, 10 Hz and 12 volts CMOS were selected as the test parameters, a combination which produced "Full Scale Deflection" (FSD) with 10 uF applied.

In addition to the above statement, it follows that "the current through a capacitor is also directly proportional to the frequency, provided that the C and E are held constant" ie a 12 volt CMOS signal at 100 Hz produced a FSD with 1.0 uF.

Hence it is possibly to change the instrument's sensitivity in decade steps by selecting the excitation frequency accordingly.

DIVIDER CHAIN CRYSTAL FREQUENCY

Suddenly the idea came, why not use a crystal oscillator and a string of dividers. Surprisingly this approach proved more economical than the original potentiometer method.

A search through various catalogues gave an average price of $2.50 for the multi-turns, as against $1.00 for a TTL divider chip (74LS90) and socket.

The cash saved would more than pay for a crystal. Originally, it was planned to use a 27 MHz CB-style crystal operating on it fundamental. Hence frequencies in the approximate 9 Hz to 9 MHz series would be available from the 74LS90s.

Then again, why not use 1 MHz (or 10 MHz)? This way, the instrument would now have the additional function of a decade marker generator! Consequently, a little more effort was put into the design of the oscillator to enhance its stability properties.

THE "MARKAP" IS BORN

One megahertz crystals had been advertised for around $13.00, whilst 10 MHz units were advertised for approximately $5.00. Therefore it would be more economical to use the higher frequency. Accordingly the circuit was designed to accommodate either.

The author employed the lower frequency version as he happened to have an old 1 MHz quartz plate in the Junk Crystal Collection. If the purchase of a crystal is intended, ensure it is calibrated to operate in the parallel mode. A series type would give rise to a light frequency error (see AR, September 1986). However, the capacity function would remain unimpaired.

It is odd how little jobs at the VK2PY QTH seem to escalate into major projects! Anyway, this one can now be presented as a self-design, not merely a copy.

ATTRIBUTES

1. Economical to build.
2. Initial set up is simple. Once one C-range has been calibrated, the remainder follow automatically.
3. Good repeatability.
4. Excellent long term accuracy due to superior oscillator design.
5. Versatile; ie the TTL CMOS and capacity functions may be operated independently.
6. Construction is quite straightforward. No PCB is required.
7. Mains operated. No more flat batteries.

CIRCUIT DESCRIPTION (see Figure 1)

(Refer to the block diagram). The oscillator is the focal point of this unit, therefore the description will commence here.

CRYSTAL OSCILLATOR (see Figure 2)

This is a basic *Parallel Mode* type employed in the traditional Colpitts circuit. It uses two bipolar transistors (Q1 and Q2) connected in a Darlington configuration.

The idea here was to take advantage of the extra stability attainable (see AR September 1986). The improvement over a single stage is due, in the main, to the extra gain available. This in turn allows for much larger capacitor values (C4 and C5) around transistors, etc. This effectively swamps out adverse reactions within and around the active device.

SD2 (IN4004) is used as a varicap and permits remote frequency trimming.

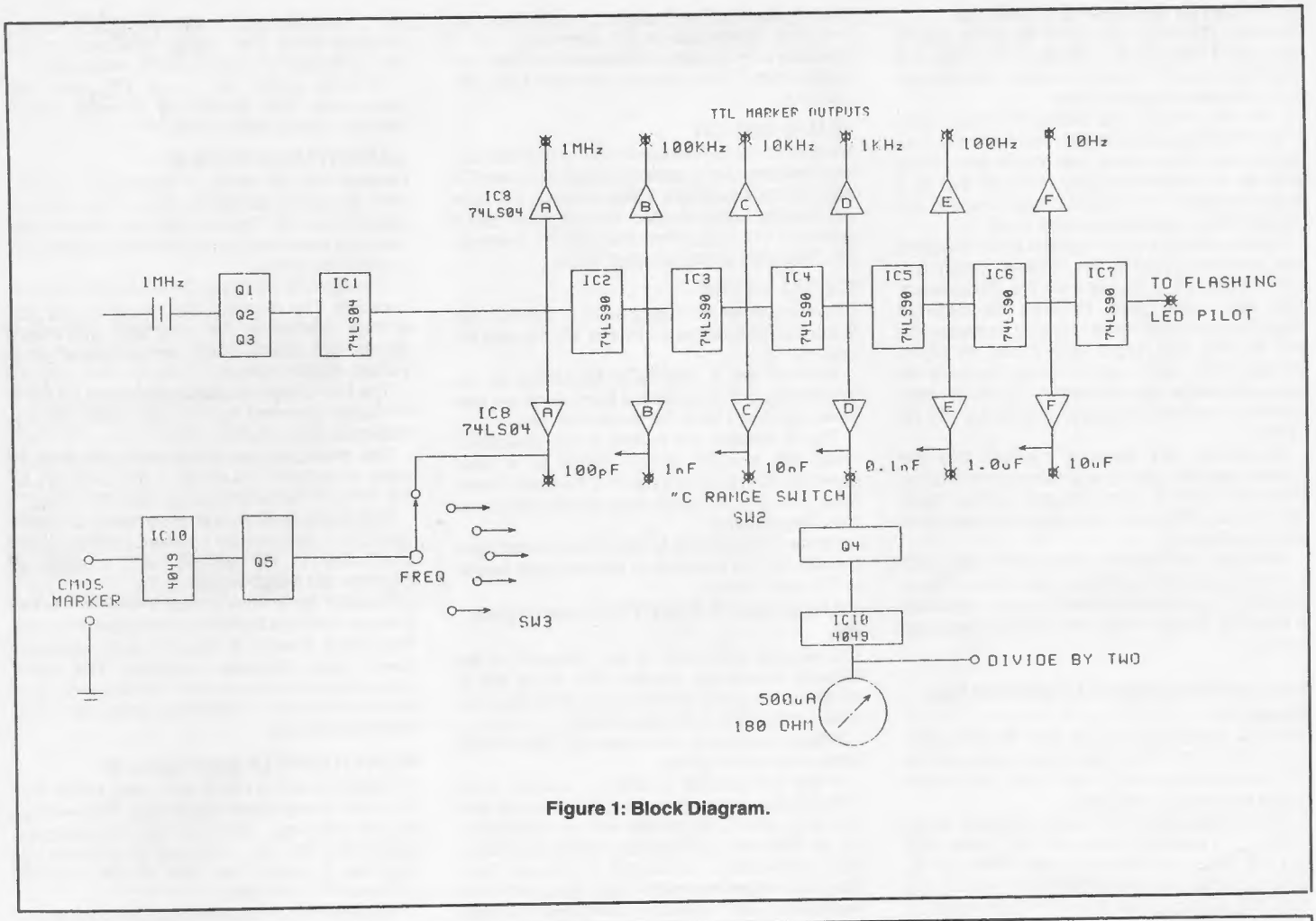


Figure 1: Block Diagram.

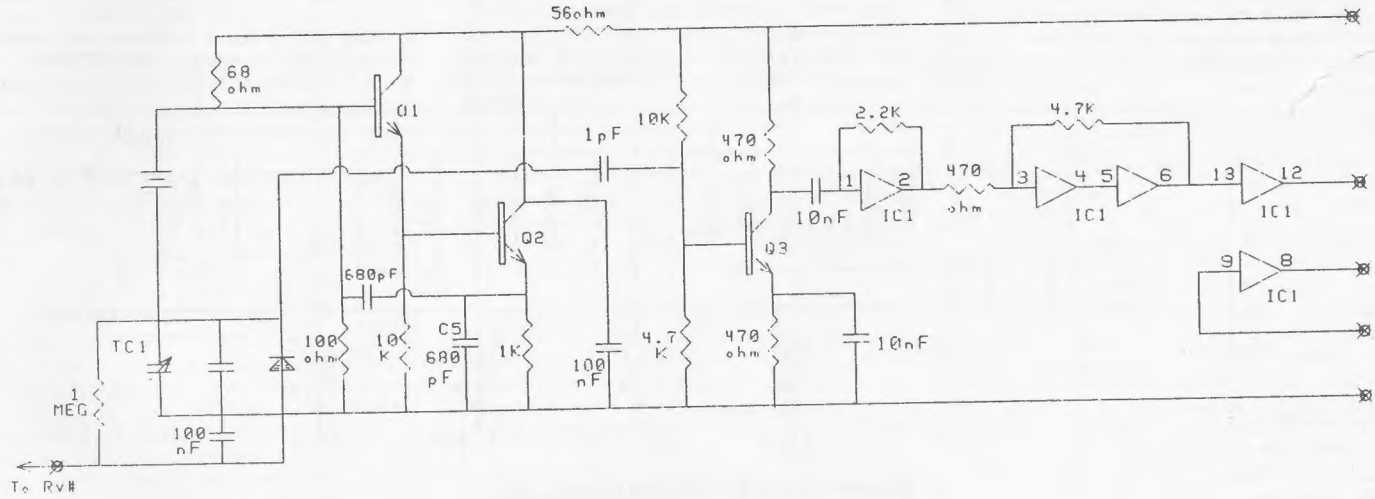


Figure 2: Board 1 — Crystal Oscillator/ Shaper.

BUFFERING AND WAVE SHAPING

Transistor Q3 serves as a buffer/amplifier and, in turn, feeds signal to IC1 (74LS04). This chip is a Hex Inverter with five sections used. Remember to tie the sixth input to ground.

The early stages are biased for linear operation, enabling adequate gain and buffering. The signal then progresses onto stage four which acts as a waveform shaper. Inverter five is a buffer between the TTL and CMOS circuitry. It is not connected with the oscillator at all.

Some eyebrows may be raised at the choice of the oscillator output point. Indeed, better isolation would be available from the Q2 collector. This was, in fact, tried. However, the distorted output signal could not be correctly processed by the 74LS04. The output from it was an asymmetrical TTL level square wave. Because its average voltage was different to the driver chain outputs, it caused serious errors on the 100 pF range.

Advantage was taken of the fact that the crystal, together with its associated series tuning capacitors form a very effective narrow band filter. An excellent sine wave signal is available at their junction.

Although very light coupling (1 pF) was used, sufficient gain and buffering was realised from the Q3, IC1 combination which, in turn, produced a nice TTL square wave with a 50 percent duty cycle.

THE ONE MEGAHERTZ VERSION (see Figure 3)

Here the signal goes to the first 74LS90 (IC2) divider. The 100 kHz output is then cascaded to IC3, thence through to IC7 (all 74LS90) where the output frequency is one Hertz.

With the exception of IC7, each output is fed to a set of two parallel "Inverter/Buffer" gates, IC8 and IC9, (both 74LS04) as is the 1 MHz signal. Consequently, six pairs of buffered outputs are available, at frequencies from 10 Hz through to 1 MHz in decade steps.

Therefore, the load on one buffered output has virtually no affect on the other, thereby ensuring complete independence of operation; ie all functions may be used simultaneously. The 1 Hz output from IC7 is used to drive the LED pilot indicator.

10 MHz OPTION

Here the original function of IC7 is deleted. It is now connected as a decade divider, between IC1 and IC2, thus feeding a 1 MHz signal to IC2 as in the low frequency model. The 10 MHz option called for TTL logic rather than CMOS, therefore 74LS90s were used instead of 4017s.

SIGNAL PATHS

Returning to the six output pairs — the first pair is arbitrarily identified as 1A and 1B, the next 2A and 2B, etc.

Each of the A outputs is connected to the appropriate TTL level output terminal on the rear panel; ie 1A to 1 MHz, 2A to 100 kHz, etc.

The B outputs are routed in two directions, firstly via selector switch (SW3) to a level converter (Q5) and buffer (part IC10-4049), finally to be available, at CMOS level, for the front panel mounted terminals.

Hence it is possible to have two independent decade outputs available at different logic levels; ie TTL and CMOS.

CAPACITANCE FUNCTION (see Figure 4)

The second destination of the "Bootput" is the capacity measuring circuitry. This is via the C range switch (SW2) and level converter Q4, then finally yet another buffer (part IC10).

Before continuing, the reason for the CMOS conversion will be given.

It was not possible to achieve a linear scale with the chosen frequency and TTL level. All was fine up to around 60 percent with errors increasing as FSD was approached, where the uncertainty exceeded an intolerable 10 percent. Considerable experimentation and frustration revealed that the "Resistive" components within the circuit were the culprits. Neglecting the "Equivalent Series Resistance" (ESR of the CUT, the main contributors to this unwanted condition were, the output impedance of the LSTTL devices and the metering resistance.

In other words, the 3 volt TTL level was inadequate. The change to 12 volts CMOS overcame the problem nicely.

CAPACITANCE DISPLAY

Readers will, no doubt, recognise the circuitry here as being similar to that of the module described in AR, October 1987. Its function was then fully described hence only a brief outline will be necessary here.

The signal is applied to CX via the DC blocking capacitor. The resulting alternating current flow is then rectified by Ge1 and Ge2 germanium diodes (not silicon) which are connected in a voltage doubling circuit.

The DC voltage so obtained charges up C2 to a voltage governed by CX. SD1 limits this to a maximum of around 0.6 volts.

The main purpose of this silicon diode is for meter protection. It is aided, in this direction, by the meter movement damping capacitor (C3).

This is an adjust on test component, its choice must be a compromise between protection and practicality. In the author's unit, a 1000 uF capacitor did the job nicely.

Resistor Rp is fairly critical in that it sets the point at which S)1 becomes conductive. If it is too high, scale linearity is impaired and conversely lower values degrade protection. The actual value must be found on test and depends upon the characteristics of individual diodes as well as meter resistances.

POWER SUPPLY (see Figure 5)

A voltage doubling circuit was used, rather than the more conventional bridge type. This was due to poor planning, rather than any real technical superiority. You see, a nine volt transformer was procured to obtain five volts for the originally proposed TTL circuitry.

However, the additional CMOS facility required 12 volts for its supply, so it was either a voltage doubler or a costly new transformer.

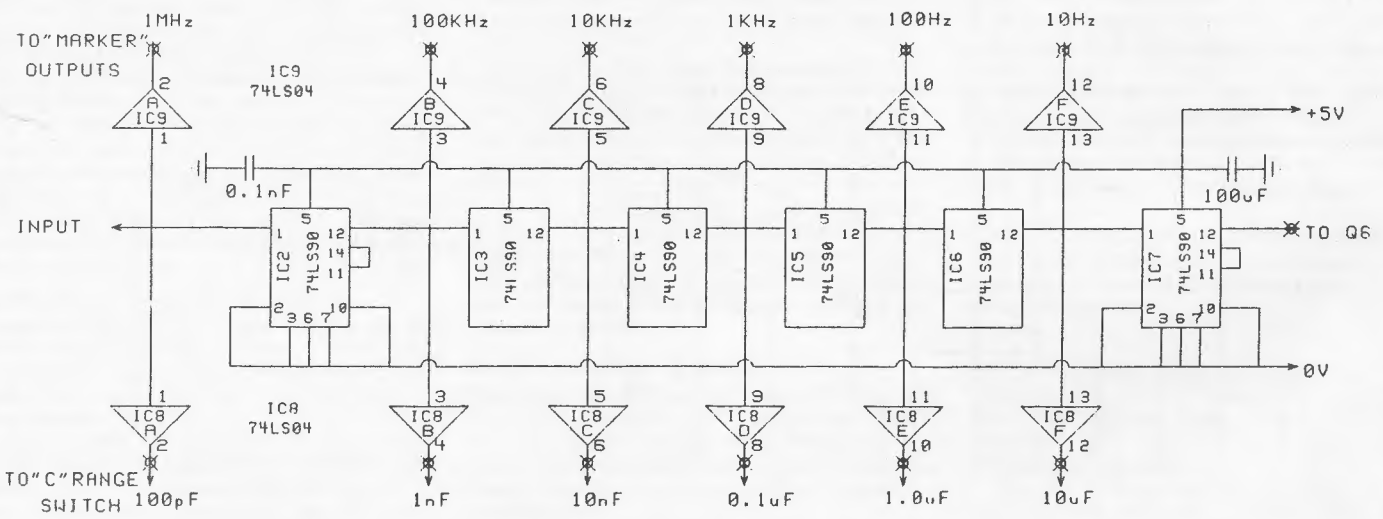


Figure 3: Board 2 — Decade Divider , etc.
NOTES:
IC8 = 74LS04
IC9 = 74LS04
Pin 7 = 0V
Pin 14 = +5V
All 74LS90s are wired identically

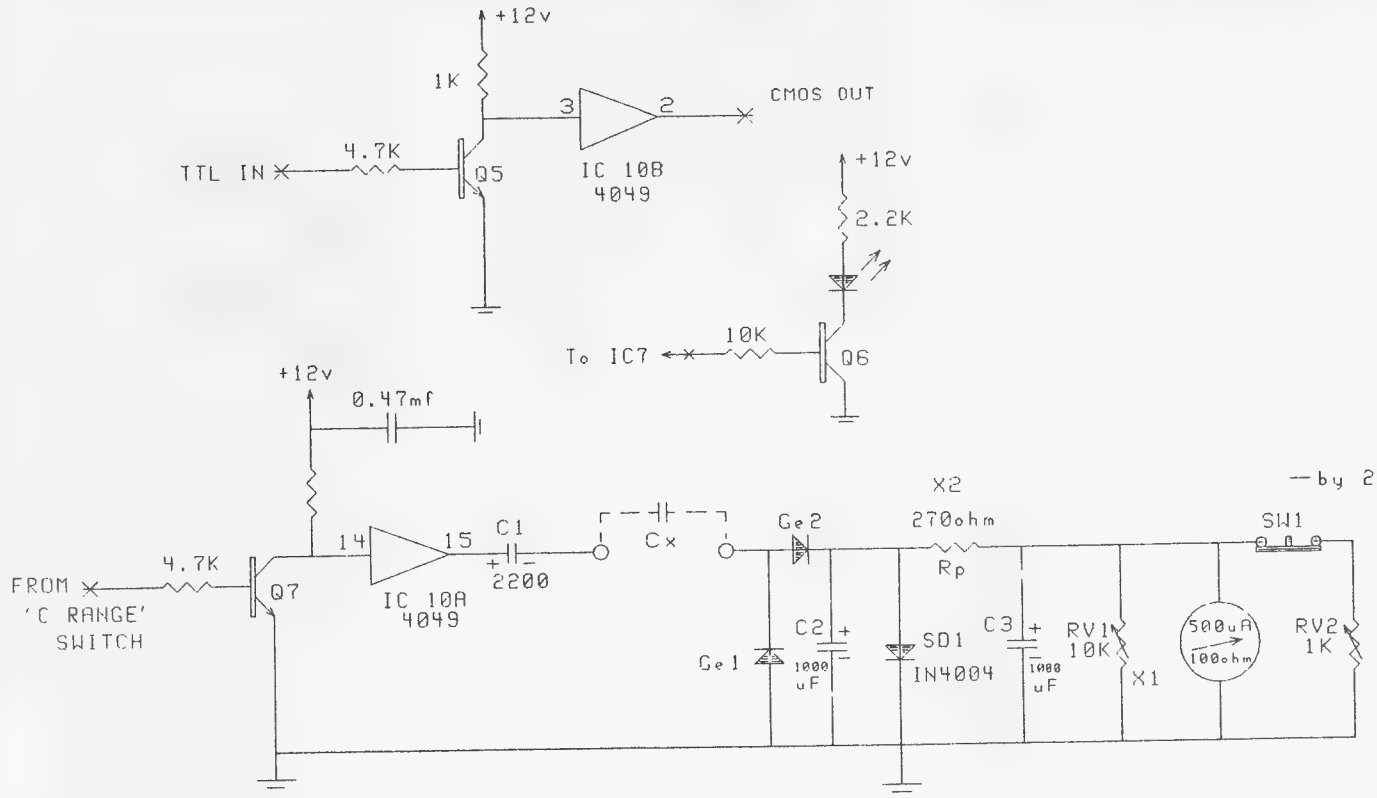


Figure 4: Board 3 — Capacitance Meter.
NOTE:
RV1 and RV2 must be 10 turn types.

The resulting higher regulated voltage also enables a greater capacity swing from the varicap, which would, if required, produce a wider trimming adjustment.

The 240 volts AC is applied to the transformers primary via the usual fuse/switch combination and is then stepped down to nine volts in the secondary. This is, in turn, fed to the doubler (C6 and C7 plus SD3 and SD4).

These two capacitors have a total effective value of 500 uF and, together with the fairly light loading, provide adequate filtering. The 0.47 uF bypass was fitted to lower the high frequency output impedance.

Five and 12 volt output is provided by two three terminal regulators (IC11 and IC12). Note that the lower voltage circuit is sourced from the 12 volt "bus". This gives extra supply regulation to the oscillator and possibly better frequency stability.

A small scrap of two millimetre sheet aluminium was used a a heatsink on both regulators. All of the above components were mounted and wired to a 80 by 40 millimetre board fashioned from perforated, non-copper, bakelite sheet.

CONSTRUCTION — MECHANICAL

This facet commences with the metal bashing and must not be rushed. Great care and forethought should go into the planning stage. The idea is to achieve an aesthetically pleasing appearance coupled with an ergonomic control placement, and at the same time a viable electrical layout. It is very frustrating and difficult filling a wrongly drilled front panel hole!

The instrument is housed in a type C1066 case (available from Jaycar, etc). Its size is just about right for the job.

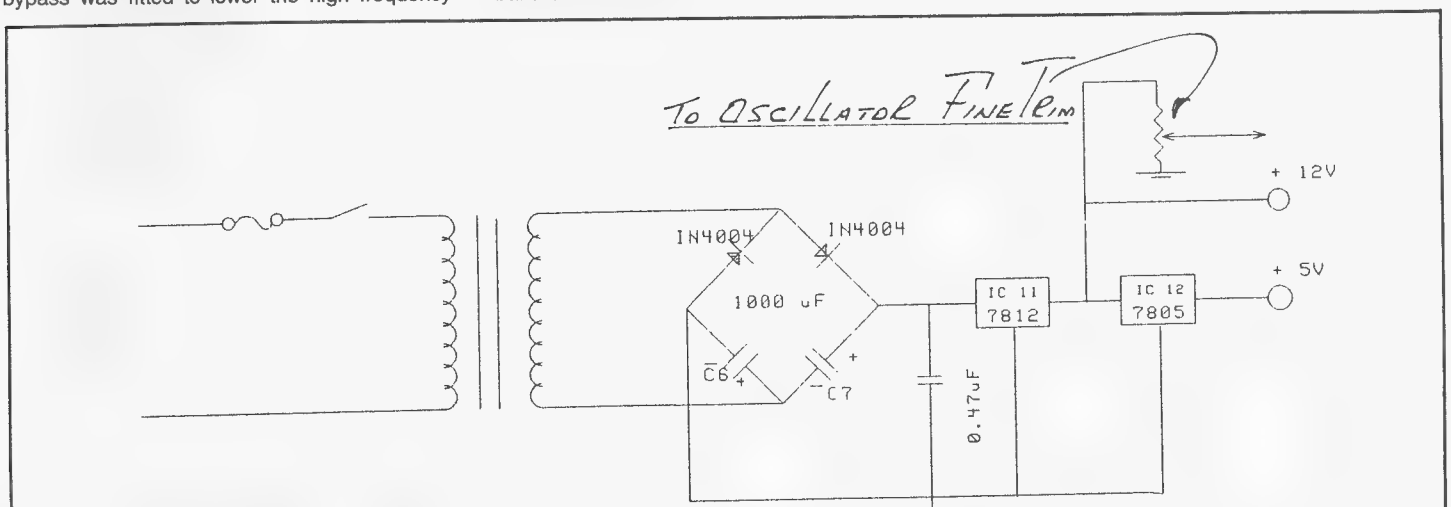


Figure 5: Board 4 — Power Supply.

The front panel layout (Figure 6), was mentally divided into quadrants and the control positions designed and allocated as follows:

Quadrant 1 ..... CMOS Marker Function
Quadrant 2 ..... Capacitance Meter
Quadrant 3 ..... Power Control
Quadrant 4 ..... Meter

REAR PANEL

This carries the six pairs of terminal for the TTL outputs, RV3 Frequency Trim, the mains fuse and the input cable grommet. The placement of these parts are left to individual preference.

The front panel of the C1066 case comes with a beautiful satin finished appearance. It was decided to utilise this and thus save spray painting. Great pains were taken to preserve the satin finish. So much so, that the original plastic wrapping was left in place throughout the marking-out process and subsequent drilling. This proved reasonably successful as the end product was almost free of blemishes.

After completing the two panels, attention should be then directed to the base. Arrangements are required here for mounting the electronics; ie mounting holes to be drilled in the requisite places, etc. These details are left to the individual constructor. However, boards two and three should run parallel and close to the front panel. Board number two should be immediately behind the "range" switch and board three should be adjacent to the meter. This arrangement makes for reasonably short wiring runs. Adequate space must be left for the front panel hardware.

Label the front and rear panels with Letraset or similar and finish with a light spray of clear lacquer. Unfortunately, this protective layer modifies the satin finish, but the appearance is still quite attractive.

After allowing the lacquer to harden for the stipulated time, mount the various hardware items.

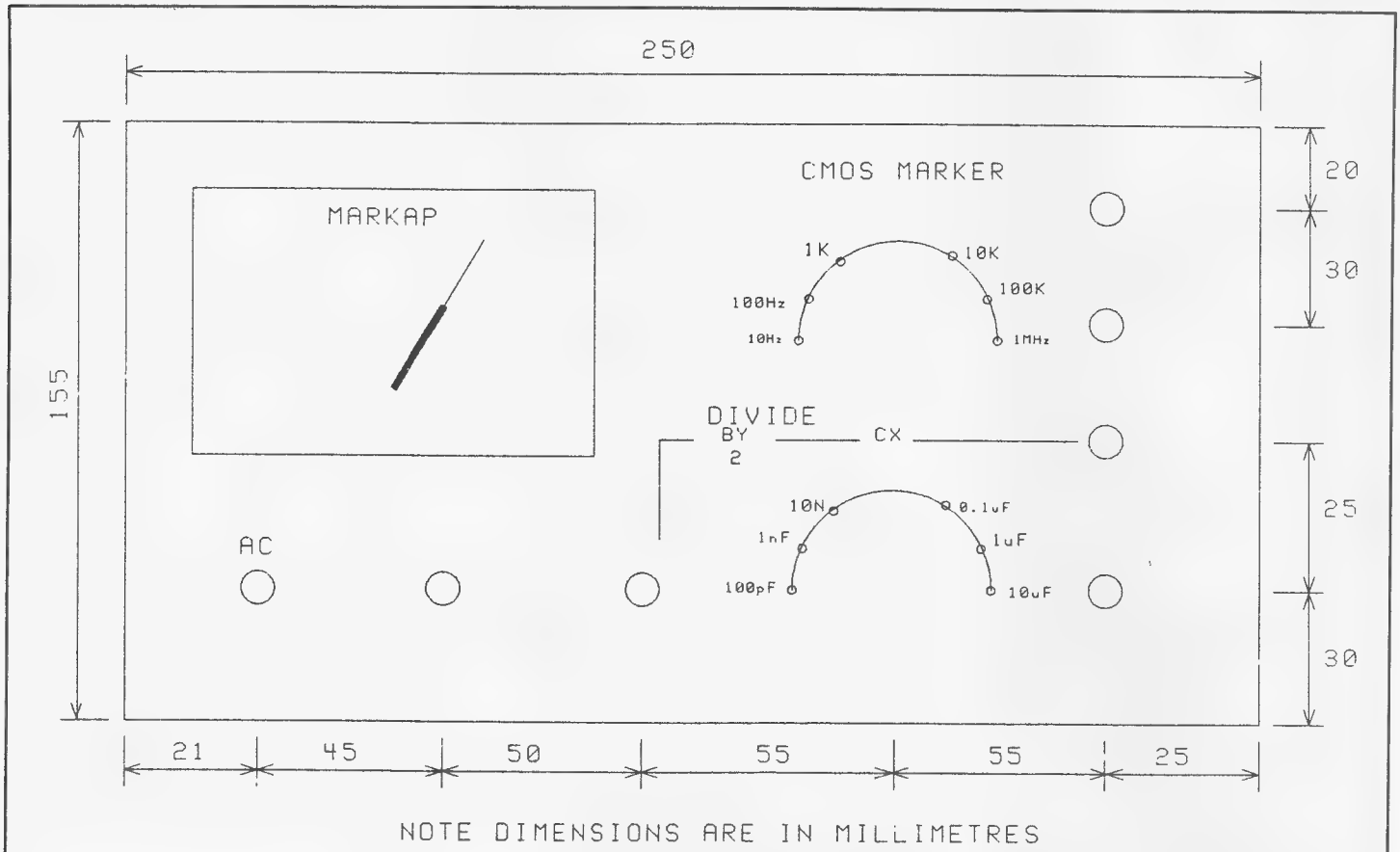


Figure 6: Front Panel Layout.

CONSTRUCTION — ELECTRICAL

The modular method is used here, in that the main electronics are built onto four individual boards. Boards numbering one through to three are hard-wired onto IC Boards (Dick Smith Catalogue Number H5610) whilst the last utilises a small piece of plain perforated bakelite sheet.

The contents of each are itemised below and are enumerated mainly from left to right.

BOARD NUMBER ONE	CLOCK OSCILLATOR — Fig 2
a) Q1 (BC108 or similar)	Part of crystal oscillator
b) Q2 (BC108 or similar)	Part of crystal oscillator
c) Q3 (BC108 or similar)	Buffer amplifier
d) IC1 74LS04 (Hex inverters)	Buffer/shaper
e) SD2 IN4004 (or similar)	Varicap
BOARD NUMBER TWO	DECADE DIVIDER — Fig 3
a) IC2 through IC7 all 74LS90	Decade divider
b) IC8 74LS04 (Hex inverter)	Buffer
c) IC9 74LS04 (Hex inverter)	Buffer
BOARD NUMBER THREE	CAP READ IYT etc — Fig 4
a) Q4 (BC108 or similar)	Level conversion
b) Q5 (BC108 or similar)	Level conversion
c) IC10 4049 (CMOS)	Hex inverter
d) Ge1 or Ge2	Germanium diodes
e) SD1 IN4004 etc	Meter protection
BOARD NUMBER FOUR	POWER SUPPLY — Fig 5
a) SD3 and SD4 IN4004 etc	Voltage doubler
b) IC11 7812	12 volt regulator
c) IC12 7805	5 volt regulator

CIRCUIT BOARD WIRING

The same method is used for each board, and to avoid being repetitious, the construction of one will be detailed here.

Free use is made of Circuit Test Pins (Dick Smith Cat No H5590), and are shown by an asterisk on the circuit diagram. They are used for transistor connections, power supply feed, all buffer inputs and outputs, signal in and out from each IC and other points as and when required.

Sockets are provided for all DIL circuits and are the first items soldered onto the boards. Next are the supply lines, positive along the upper edge whilst the negative runs along the lower. Solder lugs are organised so that their holes coincide with the board mounting holes and are positioned so that they may be soldered to the earth pins.

Run the IC earth leads, using bare tinned copper wire and/or any convenient tracks. Do likewise with the interconnection links, not forgetting the VCC (Positive) supply, followed by the

inter-chip wiring using insulated wire. Wherever possible, signal wiring is run along the upper surface and soldered underneath or to circuit pins.

Earth the unused buffer inputs (**not outputs**), fit resistors and capacitors.

Before proceeding further, inspect your work under a strong light. Remove possible shorts and re-solder any joints which appear dubious. When completely satisfied, wire in the transistors.

The IC pin spacing must now be adjusted to suit that of the socket. This is done as follows:
Hold the chip firmly using both hands, press down gently against the bench top and tilt the IC slightly. The opposite side is treated the same way. This must be done very carefully. It is better to make two or three attempts than to mangle the pins of the first attempt.
Carefully insert the chips into their sockets, making sure that you have them polarised correctly. The board is now complete and is, hopefully, without errors and omissions. If confident, mount the board into its appointed place on the chassis. It maybe wise, however, to make one final check prior to mounting. It is surprising how simple errors creep in when one is in too much of a hurry.

The remaining boards are handled in a similar manner.

INTER-WIRING

This is done in discrete stages. As each step is completed an additional function is commissioned and is ready for testing. This tends to make fault-finding relatively easy. Hopefully the trouble, if any, must then be relative to the latest section completed.

STAGE ONE — POWER SUPPLY

Complete the 240 volts AC input wiring and then run the two secondary wires from the transformer to the supply board.

Check your work and, if satisfied, apply the "smoke-test". If all is well both 12 and five volts should be available from the respective regulators. At this stage, switch off and then fit safety covering (insulation tape, etc) over all exposed 240 volt points.

STAGE TWO — CRYSTAL OSCILLATOR-DIVIDER

Firstly run plus five volts to Boards One and Two. Route the output from one to the input of two. Wire and loom the wires from IC9 (74LS04) to their allocated rear mounted terminals.

The wiring to the trim pot may now be done and harnessed into the above loom.

The stage is now ready for testing and should preferably be done with a CRO, however, it is possible to use the station receiver and multimeter.

STAGE THREE — CAPACITANCE METER

This requires the wiring of the IC9 (74LS04) outputs to the C-range switch and the moving arm to the level converter on Board three.

Other connections to this board are the plus 12 volts supply, the CX terminals and the metering wires.

The capacity function is now tested. Do not, at this juncture, spend too much time with the calibration, etc. An operational verification is all that is required. The full set-up technique will be explained later.

STAGE FOUR — CMOS LEVEL MARKER

Run jumper wires from the C-range to the CMOS frequency switch. Remember, position one goes to position six and so on. The moving arm of this switch connects to the input of section five on IC1, and the output goes from here to the remaining level converter on Board three. Next, pin 2 of IC10 (4049) is directed to the relevant front panel terminal.

Finally, the output of IC7 is wired to Q6 which in turn drives a red LED. This flashes at one second intervals, thus performing as a very noticeable pilot indicator.

Stage four is tested in a similar manner to that of the second. The "Markap" is now ready for final testing and calibration.

TEST EQUIPMENT

Before proceeding, a few words about test equipment. For setting up the "Markap", ideally it is an advantage to have the following equipment:
a) A *good* frequency counter
b) A calibrated CRO with time base set to about 0.5 uS/div.
c) An accurate capacitor decade box.

However, if the above are not available, you can improvise. The average amateur is resourceful and can usually manage to find a satisfactory alternative.

In place of the counter, the station receiver is quite adequate. These days, the modern set is usually synthesised, ie the local oscillator is locked to a crystal ensuring high accuracy which is the same over its entire range.

A multimeter may, in part, be used in place of a CRO. The decade box is a little more difficult, however the problem is not impossible to solve. One alternative is the obtain a 47 uF capacitor with a stated tolerance of, say, ± one percent. Another is to procure a wide tolerance 47 uF unit and organise to have it measured on a friend's bridge. It thus becomes a "transfer standard" of sorts. For further information on this method see AR, October 1987.

SETTING UP

This is straightforward and quite simple. The first task is to place the crystal oscillator on frequency.

Note, if using a synthesised receiver, set it to 30 MHz (or the highest exact Megahertz frequency). The reason for this is that, one Hertz change in the crystal frequency will be multiplied by 30, thus making it easier to detect small changes.

Proceed as follows:
1. Make and fit a temporary cardboard cover for the C1066 case. The purpose of this is to simulate the actual one and allows the circuitry to warm-up. Therefore, the adjustments may be made at near normal operating temperatures.
2. Switch both counter (or receiver, etc) and "Markap" on.
3. Allow it to stabilise for about one hour.
4. Set trimmer (TC1) to approximately mid-travel.
5. Ascertain the frequency excursion available from the trim pot (RV3).
6. Temporarily set it at mid-point.
7. With the counter on the one second time base range, adjust TC1 to give a reading of 1 MHz (± 1 Hz).
8. Change the counter to 10 seconds and fine trim with RV3.
9. Let it run for another hour or so and, if necessary, readjust.

TTL LEVEL MARKER

No adjustments are required to commission this function. It either works or it doesn't! As explained earlier, it is preferable to employ a CRO to verify this feature. However, the station receiver may be used instead.
1. Set the CRO controls in the following manner:
   a) Probe 10:1 (for better high frequency response).
   b) Volts/Div 0.1.
   c) Time/Div 0.5 uS.
2. Connect the probe to the 1 MHz terminal. The screen should now display a square wave of about 3.8 divisions, peak to peak, (3.8 volts) with a repetition rate of two divisions (1.0 uS).
3. Move the probe along to the next terminal and change the time base to 5 uS. If all is well, each cycle will still be two divisions of display width.
4. Similarly, move one down through the remaining outputs.

CAPACITANCE METER

The range setting potentiometers originally used were useless and very unstable. This was despite their apparent solidly sealed construction. Thus it became necessary to raid the junk box again. Fortunately, two usable multi-turn units were located.

It was then necessary to remove Board three, construct a 90 degree bracket to mount the new pots, and with a little rewiring, the board was re-installed.

Continue as follows:
1. Turn the CX-Range switch to the 1.0 uF position.
2. Connect the 0.47 uF reference to the "unknown" terminals.
3. With SW1 depressed, adjust RV1 until the meter indicates 470 microamps, ie 94 percent of Full Scale Deflection (FSD).
4. Release SW1 and adjust RV2 to give an indication of 235 microamps (47 percent FSD).

The capacitance measuring function should now be ready for service, however, it would be wise to check its operation on the remaining ranges. Inadvertently, some of the switch wiring may have been transposed.

CMOS LEVEL MARKER

This is proved in a similar manner to the TTL function with the exception that the CRO is set to 2.0 volts per division. The display should be around the 5.5 division (11 volts).

The adjustments are now complete, and the two parts of the case may now be screwed together.

OPERATING INSTRUCTIONS

MARKER GENERATORS

These require a short warm-up period, the length of which depends upon the accuracy required. For most crystals, 10 minutes should suffice.

All seven of the marker outputs may be used simultaneously, however, be warned — the high signal levels (up to 11 V P/P) may cause some receivers to overload. Hence, it is essential to use very light coupling in this type of application.

Any, or all, of the TTL outputs are enabled by connecting to the rear mounted terminals. CMOS level is available from the designated terminal having rotated the selector switch to the required frequency.

CAPACITANCE METER

This function is operative at all times regardless of the "Marker" status. Its use is quite straightforward.

1. Set the "Range" switch at 10 uF.
2. Connect an unknown to "CX".
3. Observe the meter reading (if any).
4. Rotate the switch anti-clockwise until a scaleable reading is obtained.
5. To obtain "CX", simply multiply the meter indication (significant figures) by the range switch setting.
6. Any readings below 50 percent FSD may be doubled by pressing "Divide by 2". However, the indicated value must be halved. This feature makes for better accuracy for capacitors lower than "5" on any range.
7. It is prudent to return the "Range" switch to 10.0 uF after each measurement.

Check the oscillator frequency every three months or so, and if necessary, adjust RV3 to compensate for crystal aging.

In conclusion, I must thank Nancy Baker of AWA Clerical Services for typing this manuscript.

POSTSCRIPT

After this article was completed, it wa discovered that Dick Smith Electronics had capacitors in stock which were quite suitable as references for use in setting-up the "Capacitance" function.

They are 0.1 uF one percent 63 volt Polystyrene units, Catalogue Number R2780 and sell for a little under a dollar.

It is recommended that two of the above be purchased. With two capacitors, three reference values are obtainable; ie 0.1, 0.2 and 0.05 uF. These values are realised by using them in parallel, series or singularly.

It is possible, using the divide by two control, to obtain meter checkpoints at 1, 2, 4, 5 and 10 on the meter scale.

That concludes an alternative cost-effective set-up procedure. Perhaps it would be an idea to store the two 0.1 uF capacitors inside the "Markap" case. Then you would know where to locate them at a later date!

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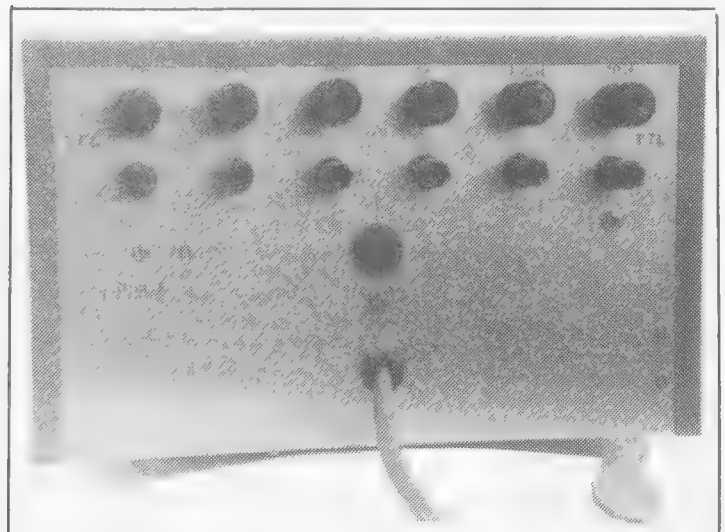
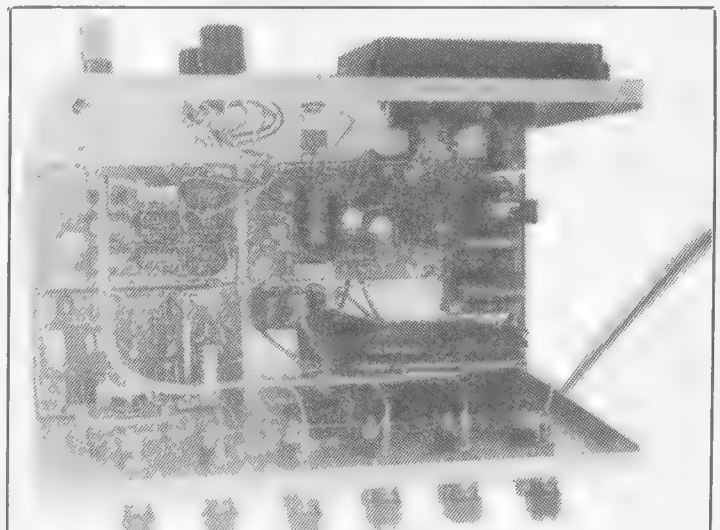


Rear View.



Internal View.

Try This!

HALFWAVE DIPOLE

An antenna which began as a halfwave dipole and has gradually g-r-o-w-n!

Do you have plenty of space? Do you have some strategically placed trees or tall poles? Do you want to work DX on 40 metres? How about a two or three element Yagi!

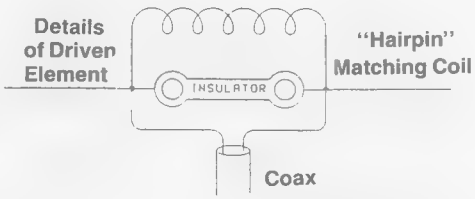
At this QTH a three element Yagi, 15 metres high, is used. Its elements are made from copper wire, insulators and rope. The driven element is 20.06 metres long. It is split in the middle with an insulator and has coaxial cable to each side. A "hairpin" match is used, consisting of a coil of heavy gauge copper wire, seven turn, 30 millimetres diameter, 100 millimetres long, and joined to each side of the driven element at the centre. The reflector is 20.93 metres long and spaced about seven metres behind the driven element. The director, if used, is 19.30 metres long and about seven metres in front of the driven element.

This antenna began life as a halfwave dipole to which a reflector was added. The original height was eight metres, and it gradually grew higher as the trees, which support it, grew, and a director was added. Trees are used on one side of the antenna and poles, made from pipe, are one the other side. A pole is at the centre of the driven element to support the coaxial cable and matching unit. A 1:1 balun or gamma match could also be used to feed it.

The biggest problem with this antenna is chafe on the ropes where they pass over tree branches, Thicker rope is used where it touches.

My antenna points a little to the north of west, towards North America. A good compromise would be due west, which would give Central America and Europe quite well, whilst South and North America would still be okay. Wherever it points, there will be DX to work!

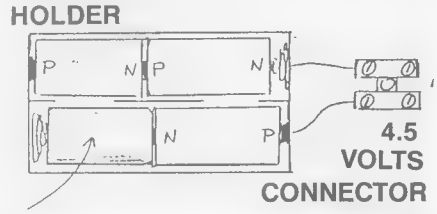
If you have the space and time, it is worth the effort!



—Contributed by VK3YH

NO FUSS 4.5 VOLT BATTERY HOLDER

As 4.5 volt batteries are difficult to obtain, or battery holders for that purpose, I used a non-destructive method to convert a six volt battery holder to 4.5 volts as required for an old, but useful instrument I had on hand. It has worked out better than the original set-up.



INSERT BLANK DISTANCE PIECE TURNED FROM ALUMINIUM ROD THE SAME SIZE AS ONE C CELL

—Contributed by VK2ADI

TOPICAL TECHNICALITIES

Lindsay Lawless VK3ANJ
PO Box 112, Lakes Entrance, Vic. 3909

Use separate batteries for the radio on a ship, if possible.

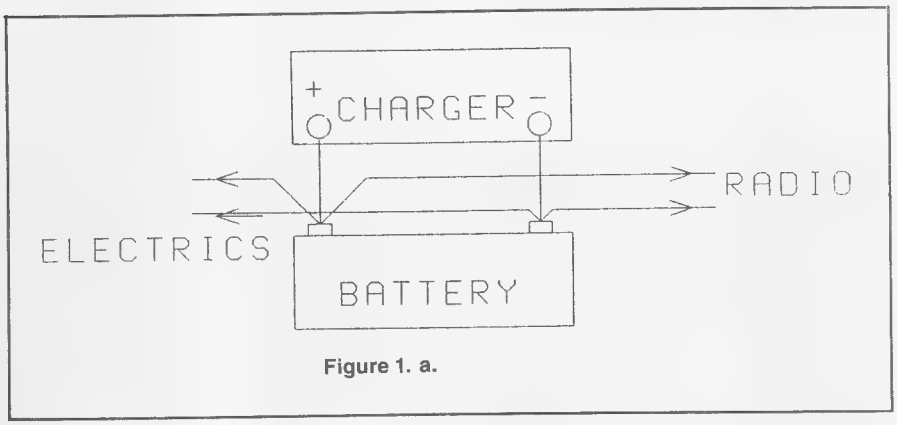


Figure 1. a.

I passed the time of day with some "blue water" yachtsmen recently. The conversation was mainly about their communication and navigational aid radio. This was very interesting and an article on the subject from a knowledgeable member would be appreciated.

One skipper wondered why the brilliance of his binnacle lamp followed the modulation of his SSB transmitter. A very distracting happening while steering at night.

The fault is in the ship's wiring caused by the installer not observing some simple maxims which apply to all mobile radio installations.

1. If possible, use separate batteries for the radio.
2. If 1) is not possible, use separate wiring for the radio direct to the common battery (Figure 1a.).
3. Choose wire size sufficient to limit voltage drop to an acceptable level.

Figure 1a is a wiring scheme for 2) above. Hash from the charger and the vehicles electrics is not coupled to the radio via common wiring. The volts drop caused by the electrics does no affect the radio and vice-versa the radio does not affect the electrics; eg the binnacle lamp.

Figure 1b is the worst and most popular wiring scheme.

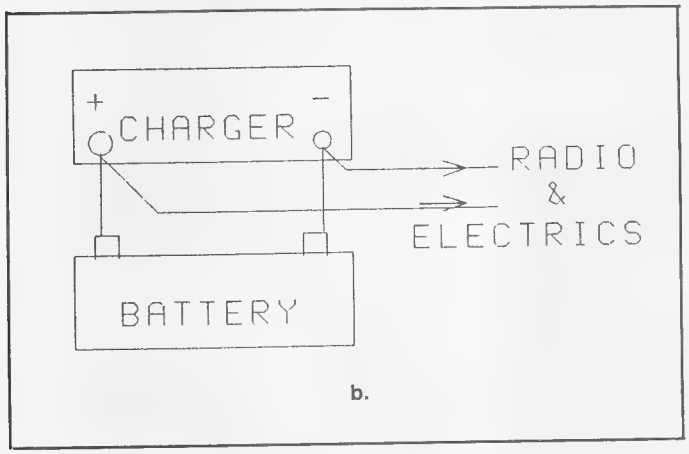
Figure 1c is marginally better than 1b if, for some reason 1a is not possible.

Wire current capacity has to be sufficient to prevent heat deterioration of the insulation. A reasonably accurate estimate of the safe capacity of PVC insulated wire is $4.7D^2$ amps. D is the diameter of the *conductor* in millimetres.

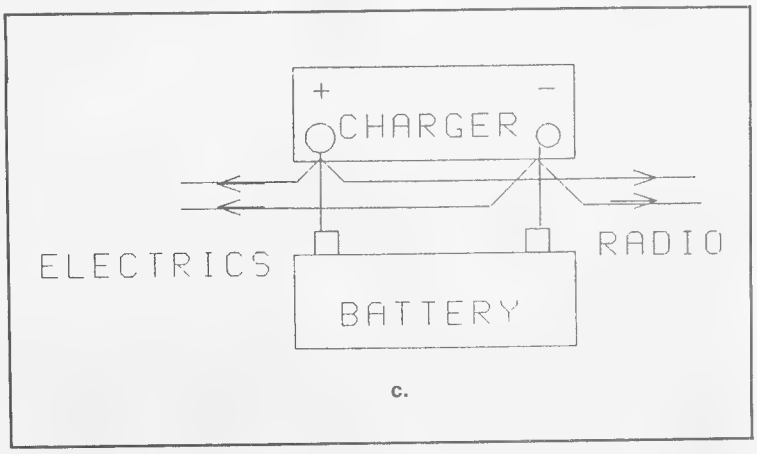
Wire tables list resistance per kilometre for each diameter, this can be converted directly to millivolts drop per metre per amp; eg one millimetre copper conductor has a resistance of 22 ohms per kilometre; read this as 22 millivolts drop per metre per amp.

The drop per metre per amp for other diameters is $22/D^2$ mV. The following is a design example:

Length of wiring run, vehicle battery to radio — 4 metres



b.



c.

Length of wire required (avoid chassis return) — 8 metres

Maximum current — 30 amps.

Required conductor diameter — $(30/4.7)^{1/2}$ = 2.53 mm, use 3 mm

Volts drop = 8 x 30 x (22/9) = 587 mV, say 0.6 V

0.6 V drop in a 12 V installation is just acceptable. Seven watts is dissipated in the wiring. Four millimetre conductor would be a much better choice.

Tinned copper conductors are better than bare copper which oxidises quickly and, in marine environments, oxide soon creeps beneath the insulation.

Wiring is best installed in open looms; the source of a fault is much easier to find.

Yachts are making more use of photovoltaic (solar) cells and these have possibilities for other mobiles.

Output is approximately 100 watts per square metre when oriented normal to the Sun's direction. One such panel exposed to full sunlight for N hours will store in a battery 80N watt-hours. (Lead acid batteries are 80 percent efficient).

An FT-707 receiver uses 20 watts, therefore 15 minutes full sunlight would replenish the battery energy used to run the receiver for one hour.

An FT-707 on transmit requires 360 watts, therefore 15 minutes transmit time would require 67.5 minutes full sunlight to replenish the battery.

It has possibilities but someone should invent a watt-hour meter to sum energy incoming and outgoings and register the favourable or unfavourable balance.

THE STORY OF AX2SWJ

Ted Brien VK2PTB
Gerry McCulloch VK2BMZ
6/10 Epping Grove, Epping, NSW. 2121

During the first 10 days of January this year, Australia played host to 17 000 members of the world-wide Scouting fraternity, during the 16th World Scout Jamboree.

Held at Cataract Scout Park, about 70 kilometres from Sydney, between Campbelltown and Wollongong, it attracted Scout contingents from some 88 countries. As usual at Scout Jamborees, an amateur radio station was established as one of the many activity bases connected with the Jamboree.

The station, using the special bicentenary prefix AX, was allocated the call sign, AX2SWJ, (for Scout World Jamboree) and succeeded in remaining on air 24 hours per day for the duration of the Jamboree. Besides being one of the activity bases (others included absailing, orienteering, overnight camping and water safety awareness) during the day, the station was also available for visiting licensed amateurs to use at night, and enabled Scouts to make contacts to their home country on prearranged scheds.

As an activity base, amateur radio was introduced into a broader context of communication (in keeping with the Jamboree's theme of *Bringing the World Together*). The one hour long activity visit began in a large tent which had a working display of Teletext (courtesy of Television Station ATN7), displays by AUSSAT and the CSIRO Division of Radiophysics showing Australia's involvement in space research, and a display of old radio receivers and other communications equipment (courtesy of Harold Burtoft VK2AAH and Brian Pierce VK2FOG). Also displayed were two old mechanical Teletype machines functioning together as a sending and receiving pair (courtesy of VK2ZOI) and nearby a contrasting VHF RTTY station using a Commodore 64 computer on the Sydney RTTY repeater, VK2RTY, (loaned by John VK2MDH). Other displays included a shortwave receiving post using two FRG-8800s (courtesy of Dick Smith Electronics), an old AR7 receiver usually tuned to the local Jamboree AM broadcast station, and a VCR continually showing the ARRL film *Introducing the New World of Amateur Radio.* After viewing these exhibits, the visitors moved into a small theatrette, where a short talk about radio propagation, time and time zones, and an introduction to the hobby of amateur radio was given. This was followed by the viewing of a specially produced videotape showing a short amateur radio contact.

After this presentation, the Scouts were then free to explore the tent in more detail, asking questions of the people in attendance, or of moving on to the nearby permanent shack and watching, or perhaps taking part in, amateur radio in action. Depending on the size of the group, one of the amateurs on the staff of the station would give a talk about the hobby, covering such topics as the requirement for a licence, the excitement of not knowing who might reply to a CQ call and some of the famous people who are amateurs. All were reminded that they were able to use the stations around them, in any language, and were able to study and obtain a licence on their own.

Preparation for establishing AX2SWJ indirectly began two years previously, when a station was established on the same site for the Australian Jamboree. For this Jamboree, the site of the station was chosen to be at the highest part of the Park, and three 21 metre timber poles were installed to support antennas. A triband beam and rotator were left at the top of one of the poles after the event, but they suffered the ravages of time and the strong winds that prevail at the site. By the beginning of 1987, only half of the beam, a weather-beaten rotator and a damaged feedline remained as evidence of what had been. This forced us to start "from scratch" to plan the station.

The first step was a visit to inspect the site. No records seemed to exist of the planning of the original antenna installation, so the pole spacings and orientations were measured and calculated. Curiously, despite the large amount of space available, the poles were not evenly spaced, and were placed in orientations which did not seem to readily favour the main population centres of the world. However, because they would not be moved, we now knew what we had to work with.

A couple of "brain-storming" sessions followed to decide the parameters of the station. Because neither of us had operated a station at such a large and international gathering, we were somewhat unsure of just what we were trying to achieve. Finally, a list of goals were agreed upon.

1. The station was primarily for use by and for the Scouts, so we would discourage operators from simply "playing radio".
2. We would use only the most common mode-phone, with perhaps CW by visiting operators if they wanted to, after-hours. We felt that, by using modes such as satellite, packet, etc, we could have difficulty in attracting sufficient operators experienced in these modes for the full ten days of the Jamboree, particularly as it would be running during the peak holiday season. We also thought that these modes could serve to confuse and baffle people who had just been introduced to amateur radio, and could perhaps violate (1) above.
3. We would use only the main HF amateur bands, ie we would not use any of the WARC bands. This was again in line with (1), and it was thought it could simplify equipment requirements. It was decided also to give VHF a very low priority, because the type of contact heard on repeaters etc, was felt to be a very poor advertisement for the hobby. Also, by having VHF too readily available, the temptation could be to talk to friends and exclude the Scouts, the reason for establishing the station.
4. Because it was anticipated that many operators would use the station during the Jamboree, it was preferable that operation be

Shelly K2BS, explaining what amateur radio is to a group of scouts whilst Nev VK2ZA continues to operate.

Garry VK2BMZ, erecting the 80 and 40 metre antennas atop one of the 20 metre poles.

as simple and as free of adjustments as possible. Ideally, it was hoped antennas could be used that did not require antenna tuners.

5. There would be three separate stations (one on 80/40 metres, one on 20 metres and one on 15/10 metres), each being connected to its own antenna system.

6. After considerable thought and discussion, it was decided not to use linear amplifiers. This decision was made on the grounds that the extra power could overload receivers on the other bands, and primarily we were looking for solid received signals that visitors could easily listen to. It was felt that if a linear was required to make a contact, chances would be that conditions would be marginal, making it very difficult for visitors to listen to anyway. Also, by adding a linear to the chain, it meant that all the visiting operators had to be shown how to tune it up properly, before they could be left to operate the station.

7. Third party traffic would not be encouraged. We would reluctantly accept any traffic for us, but we would not generate any. This was done for several reasons — there were not any experienced operators, there could be difficulties delivering messages to one person in 17 000, and, in any case, the site had many public telephones with ISD facilities, which accepted cash, credit cards or user dialled reverse charges.

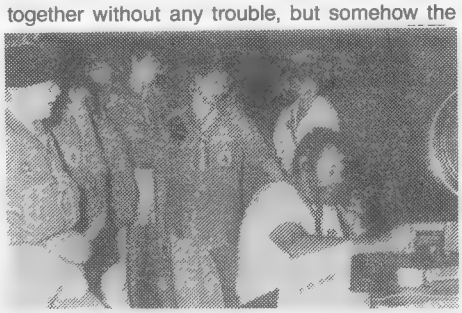
It was then necessary to decide how to implement these aims. It was assumed that 20 metres would be the main band for overseas contacts, so it made sense to have as good an antenna as possible for that band. We assumed that 80 and 40 metres would be used mostly for local contacts ad that some form of wire antenna would suffice. This left 15 and 10 metres which we thought could use a duoband beam. Because of the strong winds at the site, it was decided to purchase locally made antennas designed for strong winds. Ultimately, it was decided to use antennas from Chirnside Antennas — a CA4 four element for 20 metres and a CE42 four element for 15 and 10 metres. (The wisdom of this decision was confirmed on the second last night of the Jamboree when a very strong wind storm hit the camp. Tents were blown into trees and branches snapped from trees, but the two antennas escaped damage completely!).

With the two higher frequency antennas decided, all that remained was to make something for 80 and 40 metres. This took quite some thinking as an antenna which did not require tuning was needed, but band switching could be easily arranged from within the shack if necessary. After discarding many possible ideas, a compact loop was chosen. (See end of article for a full description of this antenna and balun, complete with SWR plots obtained on the two bands). This antenna proved very successful and two were installed with the tops about 20 metres high, oriented approximately at right angles. The only problem experienced with them was that the match deteriorated quite markedly during periods of rain. Unfortunately, there was no opportunity to investigate this and it will have to be examined at a later date.

Whilst the preliminary work for the antennas was being done, we set about arranging the other equipment. Dick Smith Electronics was approached, and readily agreed to help in any way possible. Ultimately, they loaned four FT-757GX transceivers and power supplies (one as a spare), an automatic tuner and a manual tuner, microphones, headphones, coaxial cable and rotator cable.

Because of the wind at the site and the weight of the antennas, particularly the 20 metre one, strong brackets were made to support the rotator and take most of the sideways thrust exerted on it by the antenna moving about in the wind. VK2PTB manufactured three of these, and had them hot-dip galvanised. He also made three weatherproof galvanised boxes, in which to terminate the coaxial and rotator cables. These were attached to the poles about three metres from the ground.

Although VK2BMZ had regularly climbed the poles to attach the pulleys for the wire antennas, he balked at attaching the rotators, their support brackets and the antennas. Therefore, one weekend in November was devoted to installing the beams. Saturday was spent assembling them, and putting a protective finish over all the nuts and bolts. The 10/15 metre antenna went together without any trouble, but somehow the dimensions for the 20 metre antenna did not seem quite right. Finally, just on dusk, with the antenna slung in a tree about two metres off the ground, a quick SWR check revealed that it was tuned too high in frequency. There was not sufficient tubing available to lengthen the driven element, and reduce the frequency to about mid-band. Finally, it was left tuned as low as we dared and we hoped that it would improve once it was at the top of the pole.



Mawa DL8SCW, with some of his contingent talking back to Germany during the Jamboree.

Promptly, at 7 am the next morning, the cherry picker complete with 70 feet of reach, arrived and we swung into action. Firstly, the remains of the old antenna from the previous Jamboree were removed and the rotator inspected. Unfortunately, it showed signs of being over-tightened, so it was decided to take it down for maintenance and simply install the rotator bracket. On all poles a length of pipe was installed so that an arm with a pulley in the end could be inserted, which it was hoped could be used for future maintenance on the rotator and/or antenna. As the first pole was intended for the lightweight two metre antenna, we thought the antenna and rotator could be installed at a later date without the cherry picker.

The next pole was to carry the 15/10 metre beam. Firstly, the bracket was installed, then the rotator and finally the antenna, all without a hitch. The final pole was for the 20 metre antenna. Again brackets were attached, and the rotator installed. This time, however, despite all the careful preparation, some difficulty was experienced in juggling the heavy antenna through the bracket and into the rotator. Finally, in just three hours, it was all in place and we were satisfied with the result.

A couple of weeks later, another day was spent at the site checking the two 80/40 metre antennas and making measurements on the beams. This confirmed that the 20 metre beam was still tuning too high in frequency but we decided that there was nothing we could do with it before the Jamboree. In the meantime, we confirmed that it possessed directional properties and, by using the automatic antenna tuner, it would be possible to feed power into it. Unfortunately, this violated one of the requirements set earlier, but at this time we were pleased to have an antenna in the air, and at least partially working. Fortunately, the 15/10 metre antenna appeared to be working without any problems.

Experience gained in several Jamboree on the Air weekends convinced us of the merit in having separate microphones for the main station operator and the guest Scouts, with a switching arrangement between them. In addition, headphones had proved useful in combating the noise which inevitably accompanies people observing proceedings. Therefore, three sets of outboard audio boxes were also built. These had active filters to individually tailor the response of the two different microphones loaned for the Jamboree. In addition, they had low power audio amplifiers and separate volume controls to drive the headphones for the main and guest operator. These were both independent of the rig's volume control and external speaker.

By mid-December, the Jamboree was beginning to take shape and logistics of actually manning the station were being considered. The Jamboree administration allocated us several leaders who indicated that they held amateur radio licences. Thus we knew we could have assistance within the camp from Nev VK2ZA, Andy G4VMQ, Bill WA2GNA, Greg VE7EKB, Mawa DL8SCW and Jan LA2BBA. At the same

Outside the Shack — Rear from left: Richard and Miriam.
Centre: Jan LA2BBA, Gerry VK2BMZ, Andy G4VMQ, Hilton and Peter VK2EMU.
Front: Greg VE7EKB, Nev VK2ZA, Brian VK2FOG, Mawa DL8SCW, John VK2MDH and Shelly K2BS.
Absent: Ted VK2PTB, Roy VK2VRB and Bill WA2GNA.

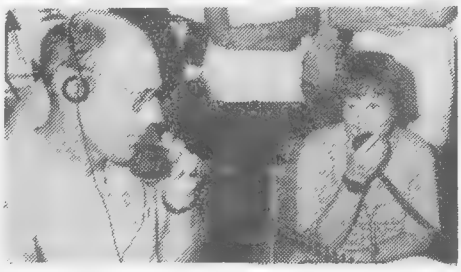
time, we received word that some people wanted to be part of the Jamboree and help-out, but they would not be part of the official contingent nor would they be living on-site. In this way, there was Roy VK2VRB, Peter VK2EMU, Brian VK2FOG, Richard PA3BAR (and Miriam), and Shelly K2BS, to help out. In addition, Bert VK3VFX, Phil VK3NXI (and Jenny) and Hank PE1CIW (who flew in especially from Singapore for two days) gave what time they could during their special visit to Sydney for the Jamboree. Because the other display tent also required the services of people who were not part of the contingent, and other parts of the Jamboree needed extra people, arrangements were made to set up accommodation in Appin, a small town about 10 kilometres from Cataract Park. (For the duration of the Jamboree, the Appin Community Hall was renamed the "Appin International Hilton"! It had a "No Vacancy" sign out for most of the time and, at its peak, provided sleeping space, hot showers and three meals a day for about 70 people).

Whilst all the work was being done on the antennas and the rest of the preparation, another group of people were working equally hard erecting a concrete building amongst the trees and poles. This was to be a lasting memorial to the World Jamboree having been held on the site, and took the form of a radio shack. It has a storeroom and large operating room, complete with power and water, and operating benches around three sides. As well as a wide veranda in front, it has a wide roller shutter door at the back which allows a tent to be erected right up next to the building, giving a feeling of one very large shack. It was opened officially be the New South Wales State Governor (and Chief Scout of New South Wales), Sir James Rowland, on Sunday, January 3, during the Jamboree. This permanent shack will be a lasting asset to the Cataract Scout Park facilities.

Finally, the Jamboree was ready to go, and so were we! The equipment was set up in the shack and tent and AX2SWJ was "on the air". All that remained was to devise a roster of operators, ensuring that everyone had at least two full days off to look around the camp, that three people were available for three hours or so after dinner, and someone was available all night, particularly to make any of the prearranged scheds. Shelly soon surprised all of us, with his dedication to CW, operating and Scouting, and not necessarily in that order! We all soon learned that he travels to every US national and world Jamboree, just to operate the amateur station set up there. He had set a personal goal of trying to work 100 countries during the duration of the Jamboree, but not at the expense of explaining amateur radio to all the visitors, and trying to meet all the sched obligations. As the days rolled past, it became a real point of interest as to how many countries Shelly had worked, and what the current score was. Before leaving home, he had notified various DX lists and newsletters that we would be on the air and looking for contacts. On about day seven, there was great cheer when Scotland was worked for country number 100. Some of the other countries worked were Nepal (9N), Saint Vincent (J88), Guantanamo Bay (KG4), ITU Geneva (4U1), Uganda (5U) ad Reunion Island (FR).

To assist in keeping track of all the contacts being made, a Commodore Amiga, provided by The Micro-Computer Spot of Parramatta, had been set up in Appin. Every day, the log sheets from the station were taken there, and all details of the contacts entered into the computer. At the same time as special QSL cards was filled out. At the end of the session, we were presented with a listing by time of all the contacts made during the previous day and, at the end of the Jamboree, each operator was given a log of all the contacts he had made.

Slowly everyone slipped into the routine of the station and the Jamboree; explaining amateur radio to Scouts and other visitors, placing scheds on the Schedule Board, keeping the "Countries Worked" list up to date, stamping the activity cards of the participating Scouts, and all the other things necessary to keep the station running smoothly. The New South Wales Division of the Wireless Institute, through Roger VK2ZIG, arranged a full day mini-bus tour of Sydney for all the overseas operators, and some of the country visitors. The tour included stops at the Department of Transport and Communications)for visitors who wanted to arrange a reciprocal licence), to Dural to see the facilities of VK2WI and to Parramatta to see the main administrative office of the Institute. A piece of paper on the notice board of the shack soon had over 50 names and call signs of other operators who were in camp, but not part of the station. One of the visitors from the camp who visited several times was Hiroshi JH4FAX. His contacts in Japanese, giving many more Japanese operators the chance to obtain a QSL, were very much appreciated.

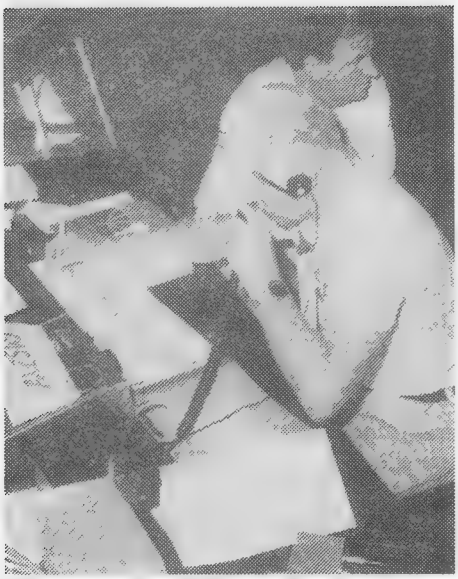


Gerry VK2BMZ, helping a visiting scout to talk to his "amateur father" in California.

For the operators, some of the most rewarding times were when prearranged scheds were successful. Some visitors found talking in monologue very difficult, but for those who mastered the technique, the experience became an ideal introduction to amateur radio. Once the visiting Scouts recognised the voice at the other end, they usually wanted to keep talking, and to arrange another sched for another day. We also received considerable publicity during the Jamboree. The Jamboree newspaper carried a photograph of Miriam helping one of the visitors to the shack; the *Illawarra Mercury* ran a feature story complete with a photograph of Shelly in one of its daily Jamboree supplement pages; and Radio australia carried an interview with Hilton Ormerod and Dean 8P6SH, who was a member of the Barbados contingent.

On Saturday, January 10, at 9 pm, the closing ceremony of the Jamboree was held. This was a sad affair for everyone in the camp, signifying the end of 10 fabulous days. For all at AX2SWJ it marked the end of a very enjoyable, but sometimes hectic, activity. By the conclusion of the Jamboree the station had made over 1450 contacts, worked 123 countries, stamped over 1800 activity cards, and welcomed twice that number of casual visitors to the shack.

Now that it is all over, what would we do differently, if we had to do it all again? In short, the answer is "Not very much." We did find that a linear would have been useful on a few occasions. Shelly particularly found this when he was trying to break into some of the pile-ups. If we did have a linear available it would have been kept for times when it was really necessary, would have been reserved for one band only (probably 20 metres), and would have been available for only a few of the main operators. If time (and suitable local components) were available, we would liked to have made some filters (bandpass for 20 metres, lowpass for 80/40 metres and highpass for 15/10 metres), to assist in keeping transmitters out of receivers. Although we suffered very few of these overload problems, we did find that 40 metres, particularly, broke through into the 20 metre rig. Sometimes, turning off the RF preamplifier solved the problem, but this was now always an acceptable



Nev VK2ZA.

solution. If it were possible, a low power FM repeater operating below 146 MHz and just serving the camp would have been useful. Some of the European visitors who brought their hand-helds with them were not able to access any of the Sydney repeaters because they did not cover above 146 MHz. Such a repeater would have been an ideal way for all the visitors to keep in contact with each other. Lastly, we would have insisted that all scheds posted on the Sched Board have both the time **and** the date in UTC! We had some difficulties in trying to decide which day a particular combination of local and UTC time and date referred to.

Aside from all the people mentioned who assisted during the event, we also have to thank Betty and Dorothy who put in many hours entering data into the computer at Appin. To "Norm" and his crew from Toongabbie Rovers who fed and generally looked after us at the Appin Hilton, to Hilton Ormerod who looked after the organisation of the whole amateur radio activity base, and finally, to Andrew Davis, of Dick Smith Electronics, who arranged the loan of all the equipment used and assisted with the purchase of all the other bits and pieces needed.

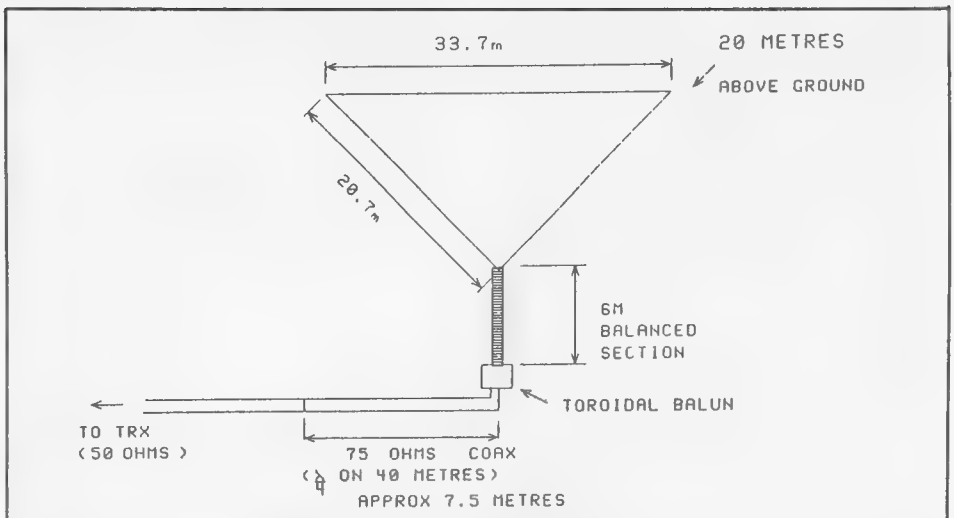


Figure 1: The 80 and 40 Metre Antenna used.

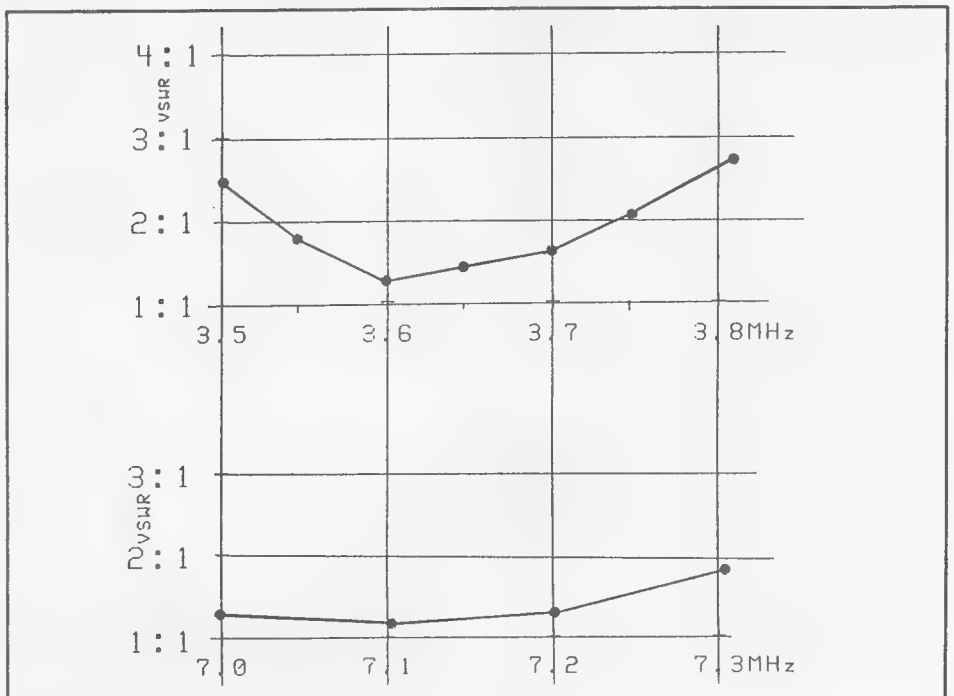
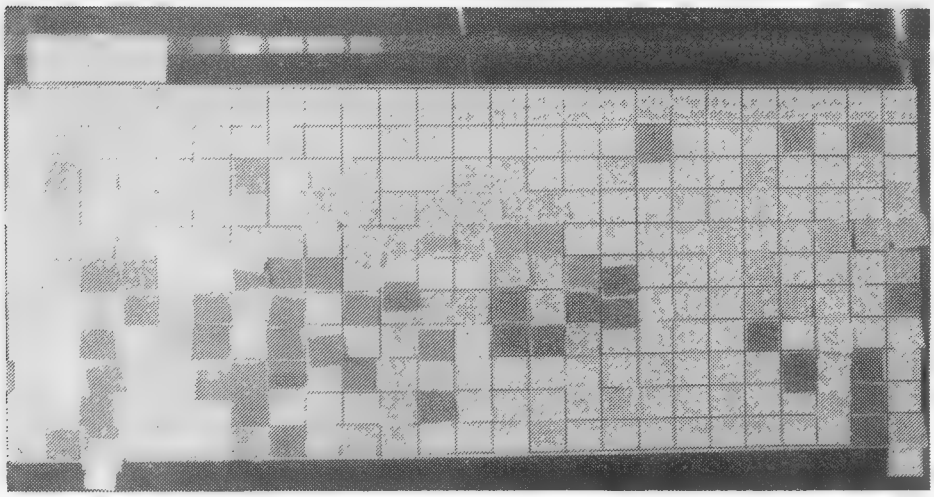


Figure 2: VSWR Plots of the 80 and 40 Metre Antenna.



The overworked Sched Board. Colour was used to indicated frequency.

THE 80/40 METRE ANTENNA

The compact loop antenna used was based on one described in *Ham Radio* a few years ago[1]. It is a full wavelength loop on 80 metres and two wavelengths on 40 metres using a total wire length of 87 metres. This was made in the shape of a delta loop, with a short length of open feedline, see Figure 1. At the end of this open feedline was a balun made with ferrite beads slipped over the outside of a short length of coaxial cable. (This form of balun is described in detail in reference 2). Following the balun was a length of 75 ohm coaxial cable, cut to be one quarter wavelength long on 40 metres. This was fed by 50 ohm coaxial cable from the shack.

The antennas were made using standard household insulated copper earth wire. The balanced line section was made using spacers of 15 millimetre grey plastic conduit, cut about 130 millimetres long. Holes of four diameter, 15 millimetres from each end, were drilled through the plastic, and longitudinal saw cuts made into them from each end. The wire was then forced down the saw cuts and into the holes. The last two spacers at either end of the open section had wooden dowels forced into the conduit before drilling and sawing. Holes about eight millimetres from each end were drilled into these to take M2.5 screws. After the wire was in place, screws, nuts, and washers were added and tightened. These clamped the wire firmly in place and provided some strain relief, particularly at the bottom of the Vee. The spacers were placed at about 600 millimetre intervals.

The quarter wavelength matching section was cut to length using a noise bridge. The bridge was initially calibrated by setting the receiver in the middle of the 40 metre band, and a good RF short circuit placed at the "Unknown" terminal. "R" and "X" were adjusted for a noise balance, and then were not touched. The short circuit was replaced by the 75 ohm cable, already prepared with a coaxial connector on one end. The far end was left open-circuit. The receiver was then tuned below 7 MHz until the noise suddenly went through a minimum. This was the frequency at which the line was presently a quarter wavelength. Small pieces of cable were cut off, and the receiver retuned upward to find the frequency of the new length. This process was continued until the null occurred in the 40 metre band. A second connector was then put on the cable.

Five ferrite bead baluns were made — two each for the beams and the 80/40 metre antennas (and one for a third, future wire antenna). These consisted of 60 Amidon ferrite beads, type FB-75-2401, slipped over a length of RG-58 cable with the outer jacket removed, and fitted into a length of 40 millimetre OD plastic conduit. For convenience, the beads were held together inside some heatshrink tubing. (See Figure 3). The input end was first soldered on to an SO-239 socket, crewed to an aluminium bracket and fixed inside the tubing. This bracket was located sufficiently far up into the tube, so that the connectors were protected from the weather. The beads were then placed on the cable and the inner and dielectric and outer braid separated. Small lugs were then soldered to the inner and braid. These were placed under the heads of brass screws protruding outside the tube, and then locked in place with flat washers, shake-proof washers and lock nuts. Epoxy glue was used to secure an end cap and to waterproof the holes where the brass screws protruded outside.

The antenna was trimmed by adjusting the length of both the top and open feeder section, until acceptable matches were found on both bands. The results finally obtained are shown in Figure 2. Compared with the original article, the top is some seven metres longer and the open line section four metres shorter. After making and adjusting the first antenna, the second one was made to the same dimensions, and gave almost identical results.

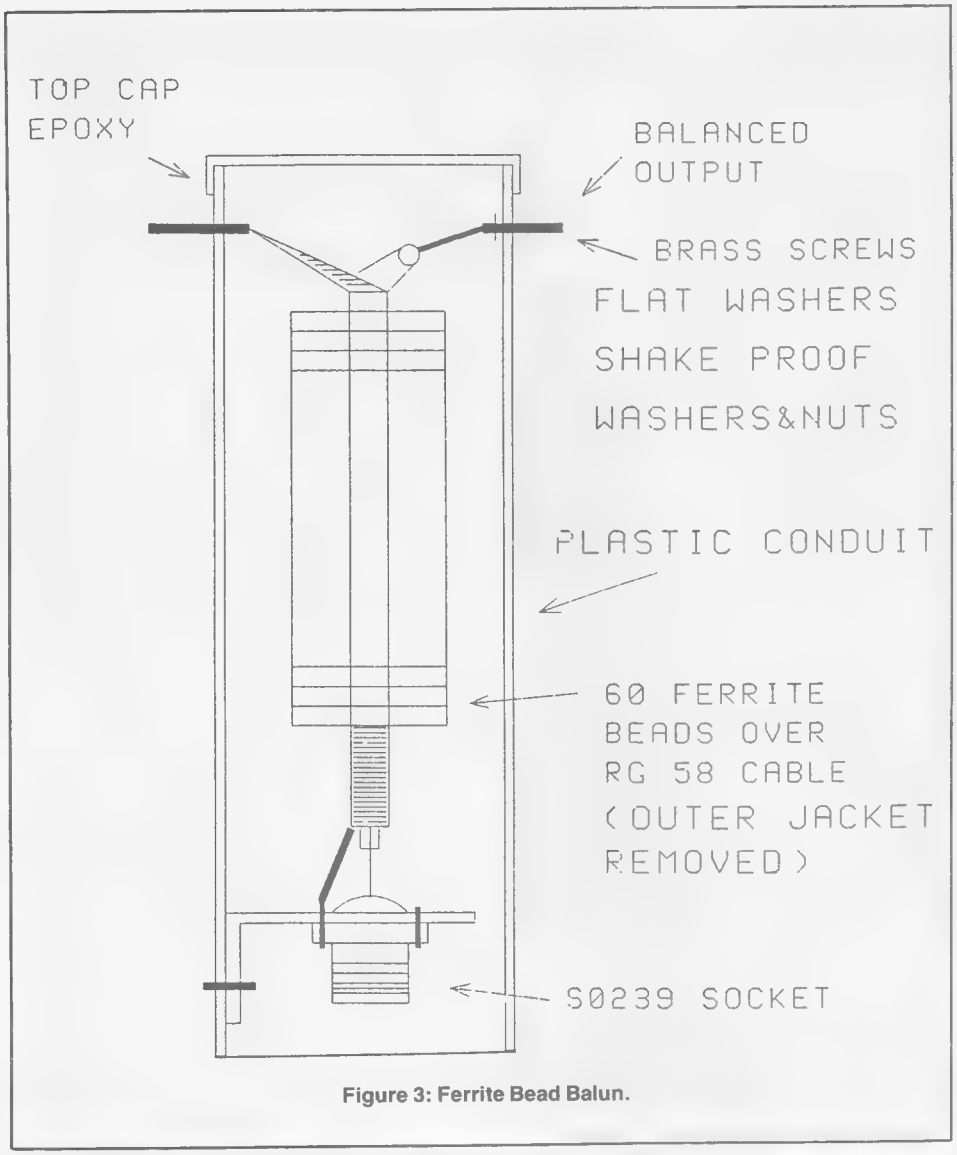


Figure 3: Ferrite Bead Balun.

Andy G4VMQ.

REFERENCES

1. BADGER, George M W, W6TC. Compact Loop Antenna for 80 and 40 Metre DX, *Ham Radio,* October 1979, page 24.
2. MAXWELL, Walter, W2DU. Some Aspects of the Balun Problem, *QST,* March 1983, page 38.

TOPICAL TECHNICALITIES — 6

Lindsay Lawless VK3ANJ
Box 112, Lakes Entrance, Vic. 3909

Loudspeakers and earphones, like microphones, are neglected by the amateur text books.

Most amateurs buy these items off-the-shelf on the salesman's 'say-so' and without sufficient knowledge to argue if the purchase is a 'lemon.'

The manufacturer of a good earphone set will specify the sensitivity in dB.SPL per milliwatt at 1000 Hz. My best earphones produce an output of 102 dB SPL per milliwatt. If I wear the set properly the coupling to the ear is almost 100 percent efficient and to produce conversational level (70 dB SPL), the driving power required is one microwatt to each earpiece, about four millivolts to an eight ohm set. My preferred listening level is about 6 dB higher, probably because of my aging receptors.

The earphone/ear combination is certainly a very sensitive detector. I can hear the lowest level 1000 Hz 'beat note' possible from my receiver which is about 1.5 nanowatt. The design logic which provides a maximum output of a half watt or more at the earphone jack is questionable. What would be wrong with a maximum of 10 milliwatts; and why can't we have a separate earphone volume control?

To get conversational level from a loudspeaker at the operating position is a little more complicated, I will use the following assumptions to illustrate.

(a) Speaker efficiency one percent
(b) The speaker is mounted in a perfect baffle which allows only a frontal hemispherical radiation
(c) The most usual listening distance from the speaker is one metre.

The speaker is therefore required to distribute 70 dB above 10^{-12} watts per square metre over every square metre of a surface of a hemisphere with radius one metre. The drive required is:

$$(4\P R^2/2) \times 100 \times 10^{-12} \times 10^7 = 6.28 \text{ milliwatts.}$$

This is about 220 millivolts to an eight ohm speaker and by a remarkable coincidence it tallies almost exactly with my preferred listening level at the operating position.

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LONGEST SERVING WIA FEDERAL PRESIDENT

Jim Linton VK3PC
4 Ansett Crescent, Forest Hill, Vic. 3131

The Wireless Institute of Australia's elder statesman, and Life Member, David Wardlaw VK3ADW, stepped down as the WIA's Federal President at the Institute's 1988 Federal Convention.

The 58-year-old dentist, and father of three, had served as President for a total of 11 years — in two terms — making him the longest serving in that office.

While on an overseas holiday with his wife Judy this year, he represented the WIA at the Radio Society of Great Britain 75th anniversary celebrations.

After returning to Australia, he soon had to pack his bags for a trip to Seoul, South Korea, the venue of the annual IARU Region 3 Conference.

David is to remain on the WIA Federal Executive out of a personal desire to contribute further and maintain continuity in Federal and International affairs.

He is the WIA's IARU Region 3 Liaison Officer and a member of the International Telecommunications Union CCIR (International Consultative Committee on Radio) Australian study group on the mobile and amateur radio services.

"I still feel I can contribute in the IARU area, and have a fair background of what has happened over the past 30-odd years," he said.

David has been a WIA member since 1947, and served as the VK3 Federal Councillor (the VK3 representative on the WIA's Federal Council) during 1956-57-58.

He was then elected VK3 Divisional President holding the position from 1959-63, before resigning to go overseas to further his studies and experience in dentistry. Whilst overseas he operated as VE3CAY and G3RYW. Since 1967 he has been a member of the WIA Federal Executive.

David was also the WIA's first Federal Intruder Watch Co-ordinator in 1967 and initiated the introduction of co-ordinators to handle IW activities on a regional basis throughout Australia.

While appearing at first glance to be an unassuming character, he has the ability to be at ease with people from all walks of life and is a good listener.

These attributes, plus his wealth of knowledge on amateur radio, have resulted in his endearment overseas where he is highly regarded.

David is not the table-thumping type of negotiator, however, he has displayed a doggedness on certain issues the WIA saw a need for change but were initially rejected by Australia's radio regulatory administration — now called the Department of Transport and Communication.

He participated in a number of IARU preparatory conferences for WARC 79, including a special preparatory meeting of the CCIR in 1978 which set the technical basis for WARC.

"That was where Australia, Canada and the US flew the kite for additional HF frequencies and the need for more satellite frequencies," David said.

The outcome of WARC 79 was a direct result of the ground work put in by the Amateur Radio Service.

"The main thing was that we held our own in a battle for frequencies under a lot of pressure from other services.

"We gained (at WARC) some additional high frequency bands and got a lot more access for the satellite service (amateur) to UHF and up.

"In their first look at some of the frequencies above 50 GHz the amateurs got a reasonable look in with a family of frequencies, although their importance has not yet been realised," he said.

From an Australian point of view, if representation of amateur radio had not been at WARC it was possible we could have lost the top end of two metres, 50 MHz, and half or two thirds of 70 centimetres, he said.

WARC 92 will be equally as important for the future of the Amateur Radio Service in Australia and internationally.

COMMENTS ON THE BANDS

While the 70 centimetre band could be under threat in Australia as it is overseas, David defends the allocations against suggestions that they are not being used. He said the UHF bands were populated in certain areas of Australia and there was a need for them to enable wideband transmissions, such as television.

Pressure could appear seeking the amateur HF bands at WARC 92, but David reminds us that the ARS needs a family of HF bands because of the vagaries of ionospheric propagation. Other services — Aeronautical, Maritime and Broadcast — also have a range of HF frequencies to facilitate communication over various distances.

We need access to frequencies spread throughout the HF spectrum which will enable the radio amateur to communicate and experiment over such a vast range of distances.

The so-called HF WARC 79 bands fit between the traditional DX bands for just that purpose and were increasingly becoming available to the ARS in countries throughout the world.

VK3ADW THE RADIO AMATEUR

David was first licensed as VK3ADW in 1948 and took to the air at a time when the bands were just being opened for use after World War II.

His introduction to radio was in 1937 when, as a passenger on a ship going to England, he was invited into the ship's radio room.

He said: "The ship's Radio Officer was showing me bits and pieces. I didn't understand much about it then but was interested.

"In those days the Radio Officer had to make running repairs, be the operator and run the ship's public address system — you name it they did it."

One thing that is sacred to David is the major annual WIA contest, the Remembrance Day Contest, a contest between the Australian States, which perpetuates the names of 26 WIA members who lost their lives serving Australia during World War II.

David has always been very enthusiastic about taking part in the 24-hour contest held during the weekend nearest to August 15 — the date on which hostilities ceased in the South West Pacific area. Normally the call sign, VK3ADW, features high up in the scores table of State participants.

David says he enjoys contacting people around Australia in this very friendly contest and each year competes against himself to see if he can improve his score from the previous year.

He is very keen on making field day-type antennas and tries them out by participating in the John Moyle Memorial National Field Day Contest (held in memory of John Moyle whose efforts advanced the Amateur Radio Service and pioneered research into VHF).

He also recalls taking to the field in the WIA Victorian Division's hidden 80 metre transmitter hunts held on Sundays in the late 1950s and 60s.

David is an ardent home-brewer and accomplished technician. He built his own sideband equipment in the early 1960s when he was virtually non-existent on the bands.

VIEWS ON THE WIA

"I think it is essential that the Amateur Service has a voice and the WIA is the voice," David said. "It has to have a voice internationally, and probably more importantly, internationally.

"If amateur radio is not viable internationally, and things happen on the international scene that we don't like, the WIA has to be in a position to influence change," he said.

In response to a question asking him to identify the WIA's weaknesses, David said a problem with the Institute is that it grew up as a group of individual divisions. To start with, it was a fairly loose federation, but was strengthened before WWII. The structure was considerably strengthened in 1972 when the WIA Federal Constitution was set up with each Division becoming a member of a federal body called the Wireless Institute of Australia.

David said: "It is, I feel, a little wasteful in personnel, in that, a lot of jobs seem to be duplicated — but it's difficult to work out a structure that would be ideal."

He said the Institute was not the only organisation with similar difficulties, National organisations face problems due to the vastness of Australia, and the different attitudes between the States. The States are individually different — which can be traced to the manner in which the six Australian colonies were formed over the past two centuries, and grew up before forming a Federation in 1901.

"The strength of the WIA is the support it gets from a considerable number of its members," he said.

During the past 30 years the WIA has represented the Amateur Radio Service on a wide range of issues. These included the introduction of television broadcasting, VHF repeaters, satellites, the Citizen's Band Radio Service, Novice licensing and the Radiocommunications Act. Others have been the customs import duty bylaw on amateur equipment, third party traffic and reciprocal licence agreements, negotiations on frequency allocations namely two metres (Television Channel 5a), six metres (Television Channel 0) and 576 MHz (UHF television).

The WIA has strengthened its federal and international activities, upgraded its monthly journal *Amateur Radio,* and computerised membership records, correspondence and office activities.

The WIA has responded to the regulatory and band-planning requirements of new modes and techniques being used by radio amateurs.

The Institute's active representative involvement on the Standards Association of Australia committees, which are setting standards on matters impinging on the Amateur Radio Service has been vital.

Members do respond, particularly to a perceived crisis, as evidenced by the support which was forthcoming for the WIA participation in WARC 79 — and earlier to ensure the Amateur Radio Service was considered at WARC 59.

Other issues within Australia, such as the Television Channel 5A threat to two metres saw a crisis response.

Being the Federal President is an onerous task particularly when so many changes are taking place affecting our hobby, and holders of this and other WIA office bearers positions come in for some criticism.

David said: "Sometimes the membership has probably been a little critical of what has been going on (negotiations), and it's difficult to please everyone.

"There are other users of the spectrum and the ARS gets caught sometimes as the "meat in the sandwich.

"Also, a big problem is political pressures put on by those wanting access to frequencies which is happening more and more these days."

In the past 12 months, the WIA had to deal with pressure from Multi-point Distribution Services (MDS)) a new technology broadcast-type microwave service — which was looking at microwave frequencies now used by the ARS on a shared band. Similar commercial and political pressure exists overseas — particularly in the USA, Canada, and Europe — and our near neighbour New Zealand has lost part of the 70 centimetre band because of such pressures.

DIFFICULT TIMES

The WIA has experienced extreme difficulties in recent years due to Federal Office staff illness. David said the WIA had become dependent upon its Federal Secretary and Business Manager. But four who have held that position in recent years have fallen ill and been unable to continue.

This puts pressure on the voluntary Federal Executive, and in particular the President and Treasurer — and the load has been heavy in the lead-up to the WIA Federal Convention.

Other difficult times have resulted from disputes between the Divisions. David did not want to specify such disputes, but as an example gave one, many years ago, which concerned repeater frequencies. He said it had been internationally agreed that a segment of two metres was to be used as a satellite band. Whilst some WIA Divisions were prepared to change their repeater frequencies out of this segment, some were not. The situation was eventually resolved by all the WIA Divisions working together.

ar

BROCHURE DOC71 ESSENTIAL FOR ALL RADIO AMATEURS

A review by Jim Linton VK3PC

Australia's radio licensing and regulatory authority has previously issued editions of a publication called *The Amateur Operators Handbook* which set out the rules governing the Amateur Radio Service.

The "Regs Book", as it was fondly nicknamed, has been out of print for several years. The last edition was out of date and did not reflect the changes which came into effect with the Radiocommunications Act 1983.

It had been recognised that material could be presented in a better format. The Department of Transport and Communication decided to split the Handbook into three sections and print a brochure for each.

DOC71 "Licence conditions and regulations applicable to the Amateur Service" was given priority and is now available.

The brochure is easy to read and outlines the licence conditions for every amateur station in the Commonwealth of Australia and its territories.

Two other brochures will be released later. DOC70 "Information for Prospective Amateur Operators" (self-explanatory) and DOC72 "Amateur Service — Operating Procedures" which will cover such things as operating guidelines, calling procedure, the Q-code, and distress/emergency procedure.

DOC71 begins by summarising the ITU definition of our hobby: The use of amateur stations shall be solely for the purposes of self-training, intercommunications of a personal nature and investigation into radio communications.

THIRD PARTY TRAFFIC

The Department sets out the rules governing Third Party Traffic (TPT). "Transmissions by an amateur station licensee, on behalf of a third party, shall be restricted to conversation/messages of a technical or personal nature."

TPT messages shall not: "Be transmitted to another country which had not made a special agreement with Australia for the exchange of such traffic."

Except in the event of a natural disaster or as authorised by the Minister or an authorised departmental officer, the licensee of an amateur station shall not solicit for third party traffic.

DOC71 in its Appendix A "Terms and Definitions" says: "Third Party Traffic" . . . in relation to the communications between two amateur stations means messages passed on behalf of any other person.

The Department has explained to *Amateur Radio* magazine that what it is stating here is "any other person" means anyone, including other radio amateurs not directly taking part in the contact. Therefore, it clearly sets out that, where a TPT agreement is not in force between two countries — the licensees are not permitted to pass a message on to "any other person". For example, an Australia station can, during a contact with one in the USA, take a message for on-passing to "any other person" including another radio amateur, because Australia and the USA have a TPT agreement. But, when such a QSO is between Australia and a station in a country which has not reached a TPT agreement, a message cannot be on-passed.

CONTROL OF STATION

Written authorisation is required before a radio amateur can operate an amateur station in the absence of the station licensee.

The Department explained to AR that "written authorisation" is required under the Radiocommunications Act — and, in the case of an amateur station, can be a simple letter.

When permitting an unqualified person (one who has an amateur operators certificate) to transmit from the station, the licensee shall be physically present to to supervise and control all operations.

UNATTENDED STATIONS

Only stations using packet radio or RTTY modes shall be operated without the licensee being physically present to control the transmitter. The Department does not allow experimentation with unattended telephony stations.

Requirements for watchdog timers and the prompt termination of transmissions in the event of interference caused to other services, a standing requirement for repeaters, also apply to unattended stations.

Stations, when using packet radio or RTTY modes of operation, shall not be connected to Telecom's switched telephone network. This refers to bulletin boards which are not permitted to be accessed, both via a dial-up telephone number and on air.

Phone patch is not mentioned specifically. But reference is made to the (Telecom) ban on amateur repeaters being patched (autopatch) to the telephone network, because Telecom believes this is in competition with mobile telephone services.

STATION REQUIREMENTS

Other sections in DOC71 cover Interference, Portable Operation, Display of Station Licence, Inspection of Stations, Identification (use of call signs), Re-transmissions, Repeaters, Translators and Beacons, and Club Station requirements.

The latter must keep a log book containing full details of all transmissions, and the name and call sign of the qualified person controlling the transmissions. Such stations cannot operate portable without the prior approval of the DOTC State Manager.

EMISSION MODES

The class of emissions, power limits, and frequencies permitted for use by Novices, Limited and Unrestricted licensees are detailed and up to date. They no longer appear on individual amateur station licence certificates. Licensees are expected to refer to DOC71 for that information.

While emissions, modes and bandwidths are specified for bands below 30 MHz, the Department has recognised that to place firm restrictions (for Limited and Unrestricted licensees) on the VHF, UHF and SHF bands could hamper experimentation.

Wideband television or pulse emission modes are to be used only on bands above 420 MHz because the necessary bandwidths are not available on lower bands. However, experimentation with all other modes, including those not yet defined, can take place on bands above 50 MHz provided they ensure the emission mode does not:

Cause interference to other primary/secondary services on the band/s, or inhibit other amateur stations from using the band/s.

Novice licensees are, when operating in the 146 to 148 MHz band, restricted to emission mode 16K00F3E (FM) at a power limit of 10 watts.

Footnotes to a table of frequency bands include frequencies in the 1.8, 3.5, 10, 18 and 24 MHz bands that must be avoided to prevent interference with shared services.

The special conditions applying to operation on the six metre band to avoid interference with Television Channel 0 are listed.

Also included is an extract from the Radiocommunications Act on the conditions all transmitter licences are subject to.

DOC71 contains the conditions and regulations under which all amateur stations operate — your shack cannot afford to be without it.

ar

EMERGENCY VK/ZL THIRD PARTY TRAFFIC

A temporary third party agreement enabled about 100 health and welfare messages to be passed between New Zealand and Australia following storms which struck New Zealand's North Island.

The New Zealand Radio Frequency Service (Department of Trade and Industry) and Australia's Department of Transport and Communications authorised third party traffic handling by the Amateur Radio Service.

Many telephone exchanges in the North Island were affected by the storm.

The temporary agreement lasted from March 8 to 14. There was no indication if a permanent agreement would be sought.

ERASABLE COMPACT DISC

Tandy Corporation has developed an erasable compact disc. The new product, on which music and video or computer data can be repeatedly recorded and erased, is a big advance on existing compact discs, whose contents cannot be changed.

Tandy claim the new disc, called Thor-CD, is a world first and could prove very lucrative for the company marketing it through its retail stores.

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Wireless Institute of Australia
Amateur Radio Action

State Managers
Communications Operations Division
All States

INTRODUCTION OF NEW LICENCE CONDITIONS FOR THE AMATEUR SERVICE

In accordance with Section 25(3) of the Radiocommunications Act 1983 it is advised that some conditions imposed on Amateur licences under Section 25(1)(k) of the Radiocommunications Act 1983 are to be changed.

From 1 June 1988 reference to the conditions specified in the current Amateur Operators Handbook will be changed to a reference to those specified in the departmental brochure DOC71.

This reflects the introduction of an up to date set of licensing conditions for the Amateur Service.

D M Hunt

D HUNT
Manager Regulatory
Radiocommunications Operations Branch
Communications Operations Division

29 April 1988

Australia 1788-1988

GPO Box 594 Canberra ACT 2601 Telephone: (062) 641177 Telex: 62025 Facsimile: 644608

Coaxial Cable Specials

Low Loss VHF/UHF Cables

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in in. Nom. D.C.R.	Insulation & Nominal Core O.D. inch	Insulation & Nominal Core O.D. mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft	Nominal Capacitance pF/m	Nominal Attenuation MHz	Nominal Attenuation db/100 ft.	Nominal Attenuation db/100 m
	9913 80C	9½ (Solid) .108 bare copper .90Ω/M' 2.95Ω/km	Semi-solid Poly-ethylene	.285	7.24	Duobond II + 88% tinned copper braid 1.8 Ω/M' 6.0 Ω km 100% shield coverage	50	84%	24	78.7	50 100 200 400 700 900 1000 4000	0.9 1.4 1.8 2.6 3.6 4.2 4.5 11.0	3.0 4.6 5.9 8.5 11.8 13.8 14.8 36.1
						Black PVC jacket.						

BELDEN 9913 low-loss VHF/UHF coaxial cable is designed to fill the gap between RG8 to RG213 coaxial cables and half-inch semi-rigid coaxial cable. Although it has the same outside diameter as RG8, it has substantially lower loss, therefore providing a low cost alternative to hard line coaxial cable. Price per metre from Acme Electronics is only $5.10.

BELDEN Broadcast Cable 8267 — RG213 to MIL-C-17D is only $5.24 per metre while BELDEN Commercial Version RG213 — YR22385 is $2.25 per metre. Prices do not include Sales Tax.

Also available from Dick Smith Electronics.

Coaxial Cables

Description	Trade & U.L. Type Number	AWG (Stranding) Dia. in in. Nom. D.C.R.	Insulation & Nominal Core O.D. inch	Insulation & Nominal Core O.D. mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft	Nominal Capacitance pF/m	Nominal Attenuation MHz	Nominal Attenuation db/100 ft.	Nominal Attenuation db/100 m
RG-213/U MIL-C-17D	**8267†** UL 1354 60C	13 (7x21) .089 bare copper 1.87Ω/M' 6.1Ω/km	Poly-ethylene	.285	7.24	Bare copper 1.2Ω/M' 3.9Ω/km 97% shield coverage	50	66%	30.8	101.0	50 100 200 400 700 900 1000 4000	1.6 2.2 3.2 4.7 6.9 8.0 8.9 21.5	5.2 7.2 10.5 15.4 22.6 26.3 29.2 70.5
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ACME 70B

Equipment Review

YAESU FT-747GX

Ron Cook VK3AFW
and
Bill Roper VK3ARZ

Are you one of those amateurs who believes that the modern HF transceiver has become too complex? That it has far too many controls? That the prices are putting this sort of equipment out of the reach of many people?

Then this latest rig from the Yaesu stable may be just the rig for you!

Along with other major transceiver manufacturers, Yaesu have obviously been doing their market research and discovered that many amateurs are asking for "simplicity" of operation in state-of-the-art HF transceivers.

The first impressions of the FT-747GX are the smallness, the light weight and, most of all, a clean, uncluttered front panel with a minimum number of controls.

Subsequent checks showed that this modern, 100 watt, all-band HF transceiver was not only lighter than the ubiquitous FT-7, but it was also considerably smaller.

FACILITIES

As you would expect from a state-of-the-art rig the FT-747GX has a general coverage receiver that tunes from 100 kHz to 30 MHz, and provides 100 watts of RF output on the HF amateur bands on SSB and CW, 100 watts peak AM, and 100 watts of FM with the optional plug-in board.

Also, in common with most modern Yaesu transceivers, a significant feature is the RS232 computer interface facility which enables Computer Aided Transceiver operation with an external computer.

There is the usual dual VFO facility, and 20 memory channels which store the mode as well as the frequency. Split frequency operation is possible with 18 of these memory channels. A feature of the memory operation is the ability to move from VFO to memory frequency, and back, without losing the VFO frequency. Further, even while tuning the receiver, it can periodically check a priority channel stored in one of the memories.

Wide band AM (6 kHz) and narrow band CW (500 Hz) filters are available as options.

Because the front panel controls are few in number, they are of a large size, eminently suitable for large, Australian style fingers. The ergonomic layout of these controls cannot be faulted, particularly for right handed operators.

The switch controls, which are all push button, include power on/off, clarifier, dial lock, tuning rate, band selection, mode selection, VFO memory transfer, VFO split, priority channel, monitor, normal/narrow IF filter selection, 20 dB attenuator, noise blanker and manual transmit.

The tuning knob dominates the front panel and tunes in 25 Hz or 2.5 kHz steps for SSB/CW. AM tuning rates are 1 and 10 kHz. FM rates are 5 and 12.5 kHz.

The remaining front panel controls are two concentric sets of knobs controlling receive audio gain, squelch (which operates on all modes), microphone gain and drive level.

An impressive feature of the transceiver is the large, very easy to read, amber coloured LCD display, which shows the operating frequency to 100 Hz, the memory channel in use, VFO A or B, modes, and status of the front panel controls.

The remarkable uncluttered back panel of the rig provides facilities for carrier frequency adjustment, connection of DC powered accessories, external speaker, key, tape recorder, linear amplifier and ATU switching, 13.5 volts DC socket, earth terminal and antenna socket.

Also, unusual in a modern HF transceiver, the speaker is mounted on the front panel.

In order to minimise stray RF pickup and radiation, the entire plastic case has been effectively metallised. The reviewers were impressed by the precision in manufacture of the case, particularly as it does not screw together in the conventional manner but successfully employs a system using two sliding clips.

For extended operation with FM, RTTY, Packet, SSTV and AMTOR, a heavy duty power supply rated at 19 amps minimum is required.

Considerable reduction in the size of the PA heat sink has been accomplished by a unique design, completely contained inside the case, which relies heavily on forced convention cooling provided by an internal fan.

In order to achieve the aim of compactness and simplicity of operation, without sacrificing performance, Yaesu have excluded some of the lesser used bells and whistles features that have almost become standard in modern transceivers, namely VOX, speech processing, IF shift or passband tuning, RF gain control (although a 20 dB attenuator is included), meter switching and a notch filter.

TECHNICAL DESCRIPTION

The receiver is basically a dual conversion, superheterodyne employing up-conversion to a first IF at 47.055 MHz, with the main IF frequency being at 8.215 MHz, where crystal filters provide the appropriate selectivity.

The first mixer has been designed to provide a very wide dynamic range, and yet, at the same time, achieve a low noise figure. Therefore, no RF stage is necessary. A somewhat unusual feature of the receiver is the provision of a surge suppressor and a small lamp fuse in series with the antenna connection to protect the receiver circuitry from high voltage pulses appearing at the antenna terminal.

Extensive bandpass filtering ahead of this first mixer eliminates significant responses to out-of-band signals.

FETs are used almost exclusively in the receiver RF circuitry which undoubtedly assists with the 100 dB dynamic range quoted.

Five voltage-controlled oscillators provide the injection signals. The frequency synthesiser, and other receiver functions, are controlled by an 80-pin micro-processor chip.

The transmitter generates sideband signals in the conventional manner. CW purists will be pleased to note that the CW carrier is generated, not by an audio oscillator, but by pulling the upper sideband carrier crystal into the filter passband, hence giving a very clean CW signal. Semi-QSK operation is provided.

The Microphone demonstrates the compact size of the Yaesu FT-747GX.

Negative feedback is used in the power amplifier stages to ensure very linear operation. Thermal overload and excess reflected power level protection is provided to the final transistors.

ON TEST

The specification on frequency stability quotes 200 Hz without stating a period of time. Our tests showed that the unit took one hour and 15 minutes to reach this amount of drift which is typical of the modern, amateur bands transceiver. A high stability oscillator is available as an optional extra.

Several low level spurious responses were noted on receive, but none were strong enough to register on the S-meter and are unlikely to trouble anyone.

The linearity of the S-meter was only fair, being somewhat generous at the accepted S9 level, and rather "Scotch" at the low signal level. However, the AGC action was very good and we could not find a receive situation that required the use of an RF gain control. The omission of such a control is obviously not a problem with this receiver.

The noise blanker dealt effectively with impulse noise but, as was expected, did not produce any noticeable reduction in the *Woodpecker* on the one occasion we tried.

Although the audio from the miniature, in-built speaker was surprisingly good, it improved noticeably when a large, external speaker was connected. Internally generated noise seemed to be lower than some other similar transceivers.

The transmitter output power was measured on all bands and ranged from 75 watts on the top end of 10 metres to 100 watts on 40 metres. Output on 160 metres was 90 watts.

On-air reports of the transmitted audio quality were very complimentary.

The relay operation was extremely quiet; however, the noise of the cooling fan was louder than one has come to expect from a modern transceiver. The noise was possibly due, as much as anything else, to the unusual placement of the fan on the side of the case, close to the front panel. Because of the small thermal capacity of the heat sink, the fan came into operation after only a short period of transmission, and turned off almost immediately transmission ceased.

Although the fan noise was noticeable the reviewers did not consider it to be a problem.

Unfortunately we were unable to check out the CAT capabilities of the unit.

ON THE AIR

At first it seemed strange to be reviewing a new HF transceiver with so few controls on the front panel. Nevertheless, it soon established itself as a very "user friendly" unit and, unlike some other units tested recently, did not require frequent reference to the manual to learn how to use its various features.

This must be one of the easiest to use transceivers on the market today, requiring only adjacent of the frequency and audio levels to achieve normal operation.

An unusual feature is the indented action of the VFO knob reminiscent of some of the channelised VHF transceivers. One of the reviewers felt uncomfortable with the lack of smoothness in tuning, but the other reviewer believed that this form of digitised tuning had a number of advantages, particularly in a mobile situation.

INSTRUCTION MANUAL

As has now become fairly common, the manual addresses operational features with almost no technical information but is quite adequate for the average amateur.

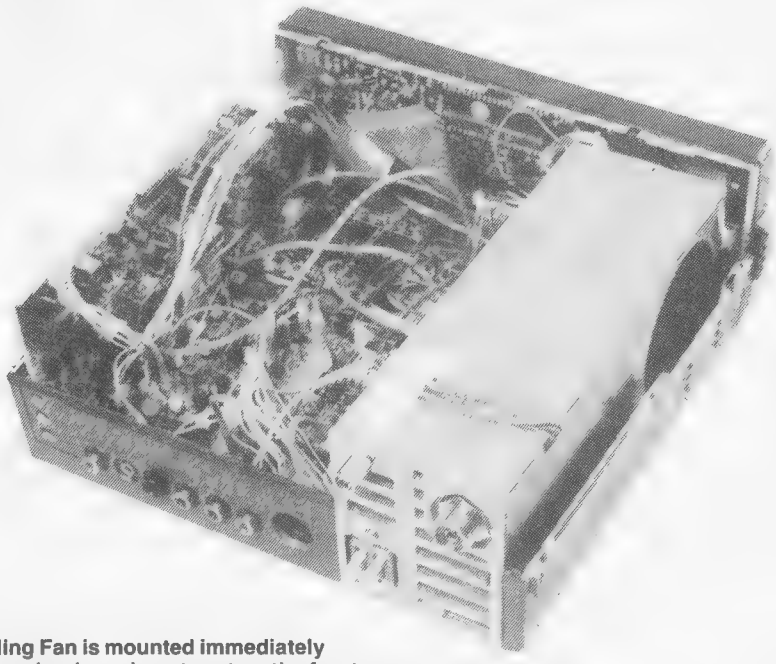
A section at the back gives sufficient detail of the Computer Aided Transceiver facility.

SUMMARY

The FT-747GX transceiver is a surprisingly small and light rig, providing all of the basic facilities expected by today's amateur radio operator. The reviewers consider that it may well become one of Yaesu's classic models.

At the advertised price of $1399, it is excellent value for money.

The transceiver reviewed was kindly supplied by Andrews Communications Systems.



The Cooling Fan is mounted immediately behind the circular exhaust port on the front panel end of the Heat Sink.

BILL ROPER VK3ARZ, was first licensed in 1959 and has been active on HF and VHF ever since. He has been employed by the State Bank Victoria for over 35 years and, although spending most of that time in a variety of administrative positions, is currently a senior branch manager.

All his earlier receivers and transmitters were home designed and built until he reluctantly faced the inevitable and gradually changed over to commercial equipment during the early 1970s. Bill is well-known for his many modifications to the commercial rigs he has owned since then, firmly believing that improvements are always possible to mass-produced equipment.

In conjunction with Ron Fisher VK3OM, he has had the opportunity to operate, test and compare virtually every model of commercial HF transceiver sold in Australia in the past 15 to 20 years. Bill's main on-air activity is on 80, 20 and 15 metres SSB, and two metres FM, but he uses all HF bands from time to time, and enjoys antenna experiments and finding new ways of modifying his commercial equipment.

Bill's other hobbies include computers, reading, light classical music and photography.

THE REVIEWERS

RON COOK VK3AFW, was first licensed in 1961 and upgraded to the AOCP in 1964. He is a professionally qualified electrical and electronic engineer who has worked at the Government Aircraft Factories, and the Defence Standards Laboratories, transferring to the CSIRO in 1979, where he is presently the Officer-in-Charge of the Melbourne branch of the Division of Applied Physics. This laboratory is responsible for maintaining and disseminating standards of physical measurements and undertaking research in applied physics for industry.

Ever since developing an interest in radio as a teenager, Ron has been involved with radio clubs and the WIA in various capacities, and is perhaps best known for the series of articles entitled Novice Notes which was published in *Amateur Radio* magazine over many years.

Ron's main amateur radio interest at present is in computer aided analysis of antennas, but he maintains an interest in an occasional venture into home built equipment for the shack. Other hobby interests include snow skiing and home maintenance.

RAISING THOSE WIRE SKY-HOOKS

Peter Robinson VK4DFR
PO Box 874, Cairns, Qld. 4870

One of the most interesting facets about amateur radio is playing with aerials/antennas!

Ever since I was 11 years old, and Pat the Postman gave me my first cat's-whisker crystal set, and friend John and I went to Waltham Dan's to buy a mile drum of Don 8 army telephone wire for £1.5.6d, which we were unable to carry, and rolled it down Oxford Street scattering angry shoppers, and down the stairs of the railway station, chipping the marble off each stair, and dragging it on to a train home at peak hour, amidst angry commuters, I have had the problem of raising that wire into the sky.

We got it up eventually, well not quite all of it, but every tree and post around my parents' house had wires and insulators attached, it criss-crossed the roof a dozen times at least, and must have looked like some crazy fisherman's net hung out to dry. But it worked, and that little DX crystal set led me to a most interesting career in electronics, and many, many happy years of the fine art of amateur radio.

One of the most interesting facets about amateur radio is playing with aerials (now antennas). One of the most difficult things about aerials is getting them up in the air, the wire ones, I mean. Not being 11 years old any more means not being able to shoot up a tree like a squirrel, hanging precariously to the uppermost branches where that aerial just has to go!

Over the years many methods have been tried for getting that wire up, from flying kites over the tree, balloons filled with gas from Mum's stove (shot down with an air rifle when they dragged the line over the branch) to attempts to train the pet cat and even a monkey in Borneo. All have met with varying degrees of success. but now I use a method or two that are so simple and effective you will wonder why you never thought of it. And many people have not thought of it, because they keep asking me how on earth I got that wire up in the tree!

METHOD 1 — CASTING: Fishing Rod and Reel

Use a light, flexible casting rod, with an open-faced reel. Light line, about six pound will do, and a small sinker. No hook is necessary!

It is important to do a little practice first, out in the open, to get the feel of it all, then, when you are ready, give it a try. With luck, you will get the line over just where you want it. Without luck, you will hit the neighbour's dog, break a window or get hopelessly tangled in Mum's washing. So, be careful!

METHOD 2 — THE CATAPULT

This is the method I prefer, as I find it more accurate than my casting. Good catapults can be obtained from many sporting goods stores. They can also be home-made from a forked piece of wood and some inner-tube rubber.

With this method you also use the open-faced reel, but only use the lower portion of the rod.

Prop the base of the rod in the ground, facing the way you want to fire, make sure the bail on the reel is pulled back, and aim over the branch. Again, it is a good idea to practice in the open first.

SOME IMPORTANT TIPS

1. Do not try to use a level wind reel (common trolling reel). The line will not be released fast enough, you will invariably end with a tangled mess, and possibly a high speed sinker rebounding into your forehead.
2. If your line has been stored unused for some time on you open-faced reel, string it out first, then wind it back onto the reel. Otherwise it may stick and tangle.
3. Practice either method in the open first!
4. Be very careful as to what is in your line of fire. The sinker will be travelling at a high velocity — and it may come off the line if it hasn't been tied on properly. Neighbour's dogs, cats, windows, children, powerlines, police on the beat and DOTC inspectors should be well out of range!
5. Choose the right angle when firing upwards. Do not shoot towards the sun.
6. MOST IMPORTANT — It may take several attempts to get the line over the correct branch. If begins on the wrong one, the line will most likely settle in a fork. Recover the line gently, and the sinker will usually hop back over. If it sticks there, **do not pull harder!** It will spring straight back at you with tremendous velocity, just like a bullet. **Be careful!** If it does stick, cut the line at the reel, and the sinker should fall and be recovered easily.

The rest is more or less obvious. When the light fishing line is over the required branch, use it to pull some heavier line, or light cord over, then attach whatever lines or ropes that are required and haul up the antenna. It is best not to use more fishing line here as birds will fly into it and injure themselves.

Do not forget to fit rubber shock cords or counterweights to allow for tree sway in the wind. Incidentally, if the antenna wire snags on other branches when pulling it up, try casting a line over the wire, to pull it to one side as the main halyard is pulled.

Take care, think **safety always** and good DX!

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VHF UHF — an expanding world

Eric Jamieson VK5LP
8 West Terrace, Meningie, SA. 5264

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.005	H44HIR	*Honiara*
50.005	ZS2SIX	*South Africa*
50.011	JA2IGY	*Mie* [1]
50.075	VS6SIX	*Hong Kong*
50.075	ZS4SA	*South Africa*
51.020	ZL1UHF	*Auckland*
52.013	P29BPL	*Port Moresby*
52.100	ZK2SIX	*Niue*
52.200	VK8VF	*Darwin*
52.250	ZL2VHM	*Manawatu*
52.320	VK6RTT	*Wickham*
52.325	VK2RHV	*Newcastle*
52.330	VK3RGG	*Geelong*
52.345	VK4ABP	*Longreach*
52.350	VK6RTU	*Kalgoorlie*
52.370	VK7RST	*Hobart*
52.420	VK2RSY	*Sydney*
52.425	VK2RGB	*Gunnedah*
52.432	VK0MA	*Mawson*
52.435	VK3RMV	*Hamilton*
52.440	VK4RTL	*Townsville*
52.445	VK4RIK	*Cairns*
52.450	VK5VF	*Mount Lofty*
52.460	VK6RPH	*Perth*
52.465	VK6RTW	*Albany*
52.470	VK7RNT	*Launceston*
52.485	VK8RAS	*Alice Springs*
52.510	ZL2MHF	*Mount Climie*
144.022	VK6RBS	*Busselton*
144.400	VK4RTT	*Mount Mowbullan*
144.410	VK1RCC	*Canberra*
144.420	VK2RSY	*Sydney*
144.430	VK3RTG	*Glen Waverley*
144.445	VK4RIK	*Cairns*
144.445	VK4RTL	*Townsville*
144.465	VK6RTW	*Albany*
144.470	VK7RMC	*Launceston*
144.480	VK8VF	*Darwin*
144.485	VK8RAS	*Alice Springs*
144.550	VK5RSE	*Mount Gambier*
144.565	VK6RPB	*Port Hedland*
144.600	VK6RTT	*Wickham*
144.800	VK5VF	*Mount Lofty*
144.950	VK2RCW	*Sydney*
144.950	VK3RCW	*Melbourne*
145.000	VK6RPH	*Perth*
432.066	VK6RBS	*Busselton*
432.160	VK6RPR	*Nedlands*
432.410	VK1RBC	*Canberra*
432.420	VK2RSY	*Sydney*
432.440	VK4RBB	*Brisbane*
432.445	VK4RIK	*Cairns*
432.445	VK4RTL	*Townsville*
432.450	VK3RAI	*Macleod*
432.540	VK4RAR	*Rockhampton*
1296.198	VK6RBS	*Busselton*
1296.420	VK2RSY	*Sydney*
1296.445	VK4RIK	*Cairns*
1296.480	VK6RPR	*Nedlands*
10300.000	VK6RVF	*Roleystone*
10445.000	VK4RIK	*Cairns*

1. JA1VOK, in his column *World VHF News* from *FIVE NINE* March 1988 confirms the Mie beacon, JA2IGY, is working continuously, but 1 kHz higher on 50.011 MHz. He also reports two other "personal beacons" JE6ZIH on 50 .020 and JG1ZGW on 50.490 MHz. A beacon is also planned for DU. KH6JJK has a "personal beacon" on 50.080 MHz from time to time.

Bill VK5ACY, advises AH6IO, in Hawaii, has a beacon on 50.070 MHz running 170 watts to a five element beam from a good location.

A letter from Jeff Pages VK2BYY, reports the Sydney beacons are presently using the special call sign, AX2RSY, as part of the New South Wales Division's celebrations of the Bicentenary. The call sign change occurred at 0000 UTC on January 26, and will continue until December 31, 1988. A special QSL card featuring the Bicentenary logo is being printed, and will be sent in return for reports received.

In addition to the call sign change, the 10 metre beacon sends the words *Australia Bicentenary* to acquaint overseas listeners of the significance of the AX prefix.

A letter has also come from Randall Lawrence VK2EFA, at Broken Hill, who advises their six metre beacon, VK2RBH, is still under construction and hopes are held that it will be in operation before next summer, as the transmitter is ready and the PCBs for the identification are under construction. Randall invites VHF and UHF operators to remember there are active stations in Broken Hill and pointing beams in their direction may produce surprises!

Via John VK4PU, comes advice from David H44DL (ex-VK4DT) that the H44HIR beacon on 50.005 MHz is fully operational 24 hours a day. If heard, and you want to alert a response, a phone call to Honiara 20051 will suffice. This will alert Graham Richardson H44GR, or Greg Pearson H44GP — just ask for them by name. They also monitor 28.885 MHz.

SIX METRES

Well, six metre has been producing results again! During the latter part of March, contacts were being made over a considerable area, extending from Japan, Hawaii and many points in the Pacific.

Following the collapse of the six metre band around the third week in December 1987, with the collapse continuing right into January, it took the approaching equinoxial period to brighten up the spectrum.

A letter from John VK4FNQ, at Townsville, gives a very good insight into what has been happening. He writes:

"I had contacts on six metres every month in 1987 except for May, via Es. I am still moving around Queensland even though I have a house near Yabula, 25 kilometres north of Townsville. I use an IC-505 with an HL66V amplifier and six element Yagi six metres high. When mobile I use the same equipment with a quarter wave whip on the front of the vehicle. The JA contacts are shown as numbers because there are so many of them!

"16/2/88: 0415 to 0446 JAs; 19/2: 1028 to 1139 26 JAs; 20/2: 0648 to 0700 3 JAs; (Location — mobile near Marathon 60 km west of Hughenden). 28/2: VK3XEX and heard VK3s working JAs; 10/3: 0917 to 1015 14 JAs' 17/3: 1122 to 1158 8 JAs; 19/3: 0410 to 0456 12 JAs (all whilst mobile). From Townsville I worked on 21/3: 1020 to 1123 13 JAs; 22/3: 0520 to 1040 7 JAs; 23/3: 0134 to 1129 2 JAs; 24/3: 1035 to 1051 4 JAs; 24/3: 1049 worked HL9CB on 50.109 to 5x4; 25/3: 0916 to 0937 3 JAs; 0939 HL9CB 5x9, 0944 HL9TM 5x9, 0954 HL2ASH 5x8. All these around 50.109 MHz. 25/3: 0955 HL9TM 5x9 on 52.035, also on FM 5x5. 26/3: 0442 50.107 KH6JJI 5x9; 0550 52.040 VK2XJ 5x5, 0805 50.109 KH6HI 5x5; 0814 50.109 KH6IAA 5x1. 28/3: 0435 50.104 KH6VP 5x9; 0440 50.104 KH6IJ 5x8; 0446 50.104 KH6JJI 5x5; 0501 50.109 KH6HI 5x5; 0551 50.109 KH6IAA 5x7; 1112 50.109 HL9TM 5x9; 0919 to 1011 worked 11 JAs. 29/3: 1023 50.109 HL9TM 5x3; 0128 to 1033 2 JAs. 30/3: 0259 52.040 KH6JJI 5x9 + 60 dB; 0305 52.040 KH6VP 5x9 + 20 dB using 10 watts both ways! 0314 50.109 KH6HI 5x9; 0326 50.109 KH6IJ 5x9; 0330 50.109 KH6JJK 4x1; 0345 52.049 KH6FQ 5x9; 0347 1 JA. 31/3: 0125 1 JA.

"1/4: 0339 50.109 W6DMJ/KH6 4x1, mobile near Warrigal; 1010 50.110 HL9CB 5x1 mobile near Hughenden; 2/4: 0315 50.120 KH6JJI 5x5 mobile Balfes Creek; 0319 50.110 KH6IJ 5x5 mobile near Chartres Towers, also from there at 0343 52.050 KH6JJI 5x1; 0542 to 0634 worked 2 JAs; 0634 50.110 HL9TM 5x3' 0715 50.130 HL9CB 5x5. 3/4: 0219 50.110 VK9NL/KH1 5x1; 0225 50.110 KH6IAA 5x9' 0227 52.050 KH6JJI 5x9; 0232 50.110 N0IZ/KH1 5x1; 0248 50.105 KH6HI 5x9; 0257 50.105 KH6VP 5x9; 0258 50.105 KH6FLD 4x1; 0312 50.105 K6GSS/KH6 5x8; 0329 50.105 KH6JJK 5x3, power 2 watts! 0349 50.120 KH6CH 5x7; 0829 50.112 W4FL/KH3 5x5; 0831 50.122 W6DMJ/KH6 5x1; 0854 50.104 KH6IJ 4x3. Many JAs heard calling FK8, T20, etc. 1035 50.110 HL9TM 5x9. 4/4 heard many JAs throughout the day. 1200 UTC heard KG6DX on Guam working T3V and other stations working Joe."

Thanks for the most interesting letter John.

John VK4PU, reports the opening on 30/3 to Hawaii and Japan between 2030 and 0330. He heard VK2s and northern VK4s working them on 50 MHz. Noticed a beacon, JA7ZMA, on 50.029 MHz. On 52.040, John worked JH0, 1 and 7, also a couple of KH6s on 52.040 MHz. Also, Al KH6IAA, sends his regards to the VHF gang in Australia.

Adding further to reports of good conditions cam telephone calls from my old friend John VK4ZJB, who reported VK4s were working JAs on 25/3 on 50 MHz. On 26/3, JA3 and JA4 on 50 and 52 MHz at 5x9; 28/3 JJ1 and JH6 to VK4; 29/3: John mentions VK4 to W6 and W5. In the absence of other reports, it may be that the stations in question were those mentioned in the VK4FNQ report and operating /KH6; 30/3 JAs to VK4 at 5x9 on 52 MHz.

A further message on 30/3 mentions he big opening to KH6 on 52.050 from 0230 to KH6JII and others. Those to work them included VK4s ZJB, ZAL and ZAA. Later in the afternoon, round 0700, good signals were available from Japan on 52 MHz.

Bill VK5ACY, is another to receive reports from the Hawaiian stations of their considerable contacts to Japan, VK2 and VK4. AH6IO in Hawaii has been worked on 50.050 MHz.

Col VK5RO, was the first in VK5 to break the silence into Japan when he recently worked some JAs late in the afternoon, also to KH6 on 50.050 MHz.

Taken overall, the 1988 autumn equinox has provided many surprises for those who have been watching the bands. It almost seems as though six metres is making up for its shortcomings during December and January by providing so many excellent contacts over such a wide area. It certainly augurs very well for the now gradual climb out of the trough of the cycle to the peak of Cycle 22. In the past the autumn contacts have usually been superior to those in the spring, but it will pay to be around next September and October.

Some late notes have come to hand from Phillip Hardstaff FK1TS, in Noumea, where he has been having a ball on six metres. He reports:

"The following is a log summary of bits and pieces, also my more memorable contacts. I run 25 watts into a two element quad. When I get back from Melbourne I will run 160 watts on two metres (all modes) to a five element quad. I will be scanning from 144.100 to 144.350 MHz as of June 1, 1988.

"I expect to operate six metres from American Samoa from August 11 to 29; as 3D2TS from Fiji 16/9 to 2/10; as ZK1? ? Cook Islands 4/10 to 16/10.

"Between 20/3 and 7/4 FK1TS worked 867 JAs! 19/3: 0424 to 0813 2 JAs, 3 KH6s; 20/3: 0416 to 0451 25 JAs; 21/3: 0800 to 0840 11 JAs, 2 KH6s; 22/3: 0514 to 0613 92 JAs; 26/3: 0614 to 0945 67 JAs, 2 KH6s; 28/3: 0454 to 1002 36 JAs, 4 KH6s; 29/3: 0520 to 1013 7 JAs, 5 KH6s; 30/3: 0519 to 0856 116 JAs, 2 KH6s; 1/4: 0432 to 0945 114 JAs, 2 KH6s, HL9CB, NO1Z/KH1; 2/4: 0223 to 1011 176 JAs, 3 KH6s, HL9CB; 3/4: 0245 to 0738 139 JAs, 3 KH6s, NO1Z/KH1, WY5L/KH3; 4/4: 0220 to 0402 19 JAs; 5/4: 0515 to 0551 5 JAs; 7/4: 0505 to 0811 56 JAs, 4 KH6s; 9/4: 0925 JA5.

"Between 25/12/87 and 3/4/88 the following countries were worked:
VK, ZL, 3D2, JA, HL, KH6, KH1, KH3 and FK — nine countries.

"KH6 stations worked: KH6IAA, KH6IJM KH6JJI, KH6HI, KH6VP, KH6JJK, W6DMJ/KH6, K6GSS/KH6. Plus NO1Z/KH1, WY5L/KH3 and NO1Z/KH1 worked WY5L/KH3 at 0730 on 3/4. FK1TS worked KH6IJ at 0728 on 28/3 with 25 watts received S9+, 2.5 watts S7, 0.25 watts S2. Also worked KH6JJK 3 watts to 3 watts at 0649 on 7/4.

"KH6IJ worked South America during March; KH6IJ and KH6JJI both reported working to USA on 28/3; KH6HI runs 500 watts into four 40 foot Yagis (moonbounce capable); KH6HI worked T22JJ at 0823 on 19/3; VK4FXX to KH6JJI 0709 31/3; VK2XJ worked KH6 30-31/3; VK4JH to HL9CB 0800 1/4; HL9TM to VK4ZJB (mobile) 0639 2/4; JA7WSZ to H44GR 0940 29/3; JAs working KH6 30/3; VK8GF to HL9CB 0521 2/4; VK8LM to JG2BRI 1017 31/3; VK4DO to JA4MBM (mobile) 0919 7/4; VK8ZCU to JF3QJR 1036 7/4; JA4MBM to H44GR 1037 7/4. In addition, numerous times VK4s have been heard working JAs and KH6s, both sides of contact being available!"

Thanks Phillip for that interesting summary of contacts. It certainly is looking good for six metres and Cycle 22 at the moment.

THE OTHER BANDS

The sudden burst of activity on six metres may give the impression nothing is being achieved on the bands 144, 432 and 1296 MHz. To the contrary, these bands have been most active during the past month or so, aided by a very large high pressure system which remained useful for a week or more. (Please refer to last month's AR, page 34, weather charts kindly provided by the Commonwealth Bureau of Meteorology and Ken VK3AH.). Comments on the three bands are interwoven because it is difficult to separate information which originates on 144 and then goes on to 432 and 1296.

Trevor VK5NC, in Mount Gambier, has been putting that place on the map! On 1/3 he contented himself by working Joe VK7JG, at 0900 on 144, 0922 on 432 and 0924 on 1296! On 18/3, Trevor gave the same three band treatment to VK3ZJC between 1129 and 1138 UTC. At 1200, it was VK6AOM, at Esperance on 144, followed by VK6JXX on three bands. At 1231, a contact with VK6AOM on 1296, whilst 432 was quite weak. At 1303, VK6AOM on 432 for a good contact. Then over to Wally VK6WG in Albany, at 1339 on 144, 1342 on 432 and 1600 on 1296 MHz, with signals 5x5.

The big event of the night, of course, were the contacts between Les VK3ZBJ and Roly VK3KXW to Wally VK6WG, on 1296 MHz for Australian and State records. This was reported in some detail last month. It will take some very careful checking to see who does in fact hold the record because VK3ZBJ and VK3KXW are not far apart.

Roly has sent an account of how events transpired around the time of the record breaking contacts. He says:

"On March 18, at 1030 UTC, the Mount Gambier repeater was S9 here at Mount Eliza. Dave VK6AOM, broke in and asked VK5AKJ to QSY to 432 MHz at 1035 UTC. I did too and worked VK6AOM 5x7. Then Ron VK5AKJ, said VK5NC and VK6WG were in contact on two metres and would be trying 1296 later. I worked both stations on 144 and 432 MHz at 5x9 both ways, around 1300 UTC.

"At 1305 worked VK6AOM on 432 at 5x7. At 1342 heard CW ident from VK6WG on 1296 at 5x5 and replayed the signal back to VK5NC and VK6WG on 432. The signals were as good at Mount Eliza as Mount Gambier. First had a crossband contact from 432 to Wally VK6WG, on 1296, his signal was 5x5. At 1548, called VK6WG on 1296 and received 329. Wally finally confirmed my report at 1629. At 1638, worked VK5NC on 1296 at 5x6. Also heard Les VK3ZBJ, having his contact with VK6WG on 1296.

"On 1296, I use an IC-1271A, four 28 element loop Yagis fed with 8DFB coaxial cable at 40 feet, Icom preamplifier.

"On 21/3 worked VK6WG on 144 at 0425 5x7' 0600 VK7JG on 1296 5x5, then FM at 0602 5x9, VK7DC at 0605 1296 FM 5x9 (VK7DC using only a dipole). At 1520, VK6AOM on 144 5x9, then 1296 at 1627 569. Dave VK6AOM, said I was his first VK3 contact out of Esperance also the first on 1296! My 1296 contact to VK6WG is believed to be the first VK3 to VK6. 22/3: 0043 VK6BE on FM at 5x9. 5/4: at 1338 VK5RO and VK5NY on 144 and 432 at 5x9. 6/4: VK6WG on 144 at 0152 5x5, 432 4x5, but no 1296.

"On 144 I use an IC-271H with preamplifier, 12 element crossed Yagi fed with RG213. On 432, IC-471H with preamplifier, 88 element Jay beam fed with RG213 cable.

Thanks for writing Roly, it certainly was an exciting period for all concerned. I note too, that you have received all the relevant QSL cards for the contacts.

The good conditions continued through the weekend of the John Moyle Field Day Contest and a number of stations were out in the field on VHF and had some good contacts. VK5LP even had a CW contact with Graham VK3YEJ/3 on 144.200 MHz, which was worth quite a lot of points to him! The good conditions brought a few stations out of the woodwork. Noted VK5KAF at Millicent having his first two metre contact to VK6. Albany stations included VK6s XY, WG, BE, ZBH, UD and YAB.

It was quite a pleasure for VK5LP, at Meningie, to have contact into Albany at 5x9 on both 144 and 432 MHz. This has whetted the appetite enough for the dust to be removed from the 1296 MHz transverter and to be looking at doing something about the 1296 MHz antenna system.

On 4/4, I received a telephone call from Ian VK5QX saying Chris VK6YAB, in Albany, was getting into the VK5 repeater 7000 and could I give him a call. This I did and had a contact. Chris was using a small hand-held device and getting into VK5RAD quite well. I was able to work him direct, but later he did in fact have a simplex contact with Carl VK5KCB, at Gawler. Time of my contact was 0649 UTC.

Since then a letter has arrived from Chris, and being a newcomer I will give him some space. He joined the WIA on 22/3/88, and thus came across my VHF columns in AR which prompted him to write. He says:

"On Monday 4/4, I climbed 'Devils Slide' in the Porongurups about 50 kilometres north of Albany and 671 metres ASL, with my TR-2600A hand-held. At 0700, I heard VK5RAD on 147.000 MHz, S3. I successfully worked through the repeater with 2.5 watts, repeating the contact on 300 mW. Worked about 30 VK5s. At 0715, Carl VK5KCB reported hearing me at S1 direct, so went to 146.500 MHz. Carl was using an FT-290R with linear and 25 watts output to a 10 element converted television Yagi, 30 feet high and 140 metres ASL, near Gawler. With 25 watts output VK5KCB was S7, with 2.5 watts S2, with 300 mW just audible. Same reports the other way. By 0730 the signal from VK5RAD had risen to S7, so at 0745 worked Carl again on simplex, hand-held to hand-held with rubber duckies. Carl was running five watts out and standing on the roof of his house. Signals were just audible. Shortly after the Nicads went flat after hearing VK3RWZ in The Grampians!

"Well and truly bitten by the tropo DX bug, next day I climbed Bluff Knoll, 1073 metres ASL, armed with recharged Nicads, two six volt lantern batteries in series and a six element beam. Opened the station at 0030 when VK5RAD was S3, with VK3RWZ just there. At 0215, accessed but could not work through VK3RWZ. VK5RAD was accessible all day at S1 to S5, but only one VK5 contact. At 0830 heard VK7TV via VK7RAD on 146.625 working another mobile so could not access. At 1019, heard VK7KMR working VK3s through VK3RWZ. At 1345, VK3RWZ improved and the first call brought Phillip VK3XSI, and then went on to work about 20 more VK3s through the repeater, but no luck simplex. VK3RWZ still there at 1900, also VK5RAD, but could not be accessed. It was still there at 0015 on Wednesday 6/4."

From the above I think we can safely say we have Chris looked on VHF and the capabilities of enhanced propagation. He said he is only 20 and has plenty of years of mountain-topping left yet! He has received confirmation of his 300 mW QSO with Carl. As time goes on it is hoped that Chris and Carl will both look at the value of extra contacts which can come also by using SSB for QRP contacts and the longer period that they can be maintained with less battery drain than the full carrier FM mode. It is a very good start though and we all wish them well for future occasions. Anyone prepared to climb a high mountain on foot with all the equipment on his back deserves some good contacts!

During one of my contacts with Wally VK6WG on 144 or 432, he remarked that since October 1987, there had been 30 openings on the GHz bands between Albany and Adelaide or elsewhere. VK6WG and Reg VK5QR, were having regular contacts on 2340 and 3456 MHz. Some of the contacts have seen signals rise to S9. They are still trying to make the distance on 5.6 GHz, and as I have said on any occasions, it is only a matter of time. On 4/4, around 2200 UTC, signals were available on 2304 but not on 3456 MHz.

On 5/4, Jim VK5ZMJ, at Port Pirie, scored a two metre contact with Joe VK7JG at 0030 which gave Jim his Worked All States on two metres. It was interesting in that Joe was first audible on six metres at VK5LP, VK5NY and VK5ZMJ. On trying two metres, the signals were weaker at VK5LP, inaudible at VK5NY and enough for Jim to make his contact at Port Pirie. Congratulations Jim, you have been waiting a long time for that particular contact.

Also, on 5/4, for most of the day the band was open on two metres to Albany and continued to be open to VK7 on and off. Roger VK5NY, subsequently worked VK7DC and VK7JG on two metres. Col VK5RO also worked VK7JG at 2330 at S5.

Again on 5/4, Ray VK3BRB in Mildura, worked John VK3YTV/2 whilst on the Cobb Highway, south of Mossgiel; and going back to 4/4, Roger VK5NY was copying Gordon VK2ZAB via meteor scatter, with his beam pointing south. The same day Roger also had a contact with VK6AS who was mobile in Esperance, signals 5x5 on two metres.

The conditions were so good over the Easter weekend that many other contacts were made by different operators, in fact, the bands had been open on 144 and 432 MHz to VK7 on and off for four days. Bill VK5ACY, (ex-VK5ZWP) worked VK7DC at 5x1 on SSB on 145.900 MHz, the higher than usual frequency being sue to TVI problems at the VK7 end.

When conditions are so good, one never ceases to wonder at the multitude of repeaters which become available at all odd times of the day. Here at Meningie I have noted up to 11 repeaters on the channels up to 7000 — I don't use a beam antenna these days, simply a staked "Ringo" on two metres with about 5 dB gain in all directions. Charles VK5YC, was pleased to work VK7ZFM on 2/4 at 0120, and then on 3/4 worked VK2AKF, and hearing VK3s at the same time, all via repeater 7000.

A RARE CONTACT

VK5LP was having a two metre contact with Mark VK5ZMK, on 5/4 when Col VK5RO broke in and said would I like to speak to an old sparring partner of mine (two metres in the 1960s) and was told Hughie VK5BC, was in contact with others on — wait for it — 160 metres! ! ! Had not fired the FT-101B up on that band for years, the best antenna would have to be the 80 metre dipole. Undaunted, and with judicious use of the antenna tuning unit, the rig loaded up to about 40 watts, and a contact was made! Worked VK5BC, VK5ARK and VK5RO on that band, but some QRN doesn't really help those sort of contacts. Oh, for the quietness of VHF! VK5BC said he was still not able to operate satisfactorily on two metres as he lives in a Channel 5A area. Pity, as he used to be a good contact from the Berri area. Incidentally, Col VK5RO must have been too close as his signals were the weakest at S3, the others S8 to S9. Noted several VK3s at the same time all over S9 so the band was in good shape, and there was not too much wrong with the antenna set-up at this end.

TOWNSVILLE

Had a letter from my friend Wally Watkins VK4DO, now living at Airlie Beach. Wally was previously ZL2TCW, VK5ZWW and VK2DEW, so he has changed locations a few times. He says he has returned to six metres "if only with an IC-505, 10 watts and a two element beam fixed on JA." Said there have been good TEP openings lately. So many stations in the JA dog-piles that he had to resort to calling them in district by district, and working 42 in an hour.

He also worked HL9CB, KH6JJI, KH6VP, and KH6HI. He reports the following beacons during the JA openings:
50.011 JA2IGY, 50.015 JA6YLV, 50.028 JA7ZMA, and 50.020 JE6ZIH. KH6VP advised the KH6EQI beacon has been off air for two years and is no longer licenced. Sometimes KH6JJK runs a three watt beacon on 50.080 during his afternoons. Wally even worked JG2TSL on CW with three watts, signals 559 each way!

Good to hear from you Wally, and once you get the linear going and can rotate the antenna, it should be possible to work you once again from these southern areas.

SOUTH AFRICA

Hal Lund ZS6WB, has sent two more copies of *VHF News* which appears to be published fortnightly, these two being February 12 and 29, although the latter is a VHF Contest issue.

Of interest to VK: The VHF Schedule Liaison frequencies are 3.725 and 7.045 MHz, the six metre DX liaison frequency, and for crossband QSOs is 28.285/28.885 and the DX calling frequency is 50.110 MHz.

In the same way we look to Japan for TEP contacts, the South Africans look towards Cyprus and Malta. ZS6XJ heard the 5B4CY beacon on 50.498 MHz at S4, 1435 UTC on 22/2, and remained there for about 30 minutes.

GUNNEDAH

Barry VK2KAY, writes to say the VK2RGB beacon is in continuous operation and runs 2.5 watts to a horizontal dipole, mode A1 keyed every 25 seconds. He has approached the WIA VK2 Division seeking some help in paying licence fees as all operating costs fall on VK2ZQX and himself. Thanks for the note, Barry.

MELBOURNE

John Martin VK3ZJC, has written to confirm the operation of a number of beacons, including VK4ABP, VK3RTG, VK3RAI, the latter on 432.450 MHz with very low power. He says VK3RMB on 432.535 may exist but it has not been heard. Non-existent beacons include VK3RGI scheduled for 144.535, VK3RTG 432.430, VK3RGG 144.530 and 432.530 MHz.

Of some concern to John is the appearance of a lot of FM operation in the DX part of the band. At times he has heard operation on every multiple of 100 kHz from 144.100 up to 145.000 MHz. One of the reasons could be that no matter how often such matters are raised in publications such as AR, the words are only noted by the dedicated and those who are WIA members, and thus acted upon. Those outside never read about the problems they can cause, possibly don't care anyway, and adopt the view they can operate anywhere they like as long as they are in the band. Such an attitude is correct of course, they can operate everywhere, but if everyone did this then there would be absolute chaos on the bands, at east the presently accepted gentlemen's agreements for portioning of the bands do provide for optimum operating for the maximum of operators.

John VK3ZJC, has also been working VK1 and VK2 using aircraft enhancement and works VK1BG and VK2ZAB regularly. On 432, VK1 signals are often better than on 144. He also has 1296 going with 12 watts of SSB/FM to a 32 element DL6WU beam at 55 feet. Best DX so far has been to VK5NC and VK7DC. John also asks if it would be possible to publish a list of 1296 operators to acquaint those on the band who is around. He lists the following as those he knows as a result of his activities:
VK3s AUX, BBU, KAJ, KXW, KZZ, YLH, YMP, YNB, ZBJ, ZHP, ZJC, ZYN; VK5s MC, NC, NY; VK6s KZ, WG; VK7s DC, HL, JG and ZAP.

To this I could add VK5QR, VK6AOM, VK6JXX and, I think, VK5ZO. If others who are operational would care to write to me I would be pleased to publish this in list-form in due course. While on the subject, why not let me know who is operating on the bands above 1296 MHz as well.

John also reports the following:
6/12/87 worked VK2ZAB on 144 and 432 by aircraft enhancement; 26/12 to 2/1/88: Nightly openings across three States, S9 every night. 144 to VK5NC, VK5AXV, VK5RO, VK5NY, VK7ZOO. 432: VK5NC, VK5MC, VK5NY, VK7DA, VK7JG. 4/1: Portable on Mount Wombat: 20 contacts. 144: VK5NC, VK5NY and VK5CMV. Missed the VK6 opening, probably cue to being above the inversion. 6/1: strong 432 openings to VK7ZHL, VK7ZBT. 8/1: worked VK5NC on 144, 432 and 1296. 9/1: attempted to work VK5NY on 1296, but no go. Both stations worked VK3KZZ in Horsham. 10/1: portable on Wilsons Promontory. 52: VK7JG, 144: VK7JG, VK7ZHA, VK5NC. 11/1: Good opening on 432 to VK7JG and VK7ZBT. 21/2: worked VK5NY on 52, 144 and 432 MHz. 28/2: worked VK5NY on 52, 144 and 432. Also on 144: VK5DX, VK5RO, VK5ZDR. 9/3: worked VK7DC on 432 and 1296 MHz FM. His dish was not up so he just used the feed — a two element Yagi! 18/3: worked VK5NC again on 144, 432 and 1296 MHz. John certainly looks like a very active operator.

ALICE SPRINGS

Peter VK8ZLX and Tim VK8KTM, both worked Joe KG6DX on Guam on 9/4 around 0322 UTC with signals peaking to S9 on six metres. So far no VS6 stations. However, he has been hearing cordless telephones from Hong Kong on 48 MHz, using 10 mW!

Peter VK8ZLX has also worked HL9TM, HL9CB and HL2ASH. He further reports many JA contacts, and Hide JA4MBM told him he had so far worked 30 countries whilst operating mobile in Japan! Some effort.

The main reason for my telephone call to Peter VK8ZLX was to follow up a report received from Japan and passed on to me by Bill VK5ACY, that the JAs had been hearing the beacon VK8RAS, Alice Springs, on two metres. Ever cautious about such reports, I phoned Peter and was advised such hearings could not be so as their two metre beacon has not been operational for at least the past two months! As this beacon is only 5 kHz away from VK8VF in Darwin, it is possible this beacon is being heard instead and the JA operators are not careful enough with their CW reading.

Also, from VK5ACY, a report from Robert AH6IO, in Hawaii, that he worked 3D2, VK4, and VK8. Peter VK8ZLX, said he knew of no contacts from Alice Springs to Hawaii but the contact could have been with a station in Darwin. Robert said all the contacts had been made with 10 watts to a vertical antenna on 50.110 MHz!

JAPAN

Hat JA1VOK, in a note attached to other information said on 12/3 he worked P29PL, at 1033 UTC, 13/3 P29ZEF at 1107, 15/3 P29ZFS at 1106, 17/3 YC0UJO at 1233, 20/3 FK1TS at 0415, H44GR at 0905, H44GP 0927, 21/3 VK9LJ (Lord Howe Island expedition by JG3KUT) at 0517, and 24/3 T22JJ (Tuvalu expedition by JH2MBF) at 1018, as well as some VK4, 6 and 8 stations. Quite a good effort.

Information from *Five Nine* sent by Hat JA1VOK, reports: "JA1UT reports Singapore has issued a special permission to Singapore Amateur Radio Transmitting Society to operate on a spot frequency of 50.125 with 10 dBW output power between June 3 and 12, 1988 for propagation research. The call sign will be 9V1ES and a split QSO is proposed by 50.110 (call 50.125). QSL via JA1UT."

Other news from *Five Nine* says LU7DJZ worked KP4EOR around 0000 on November 1, 15 and 30, 1987. Also, KH6JJK has a beacon on 50.080 MHz.

QSL INFORMATION:
FK1TK — Henri Rainer, Box 4608, Noumea, New Caledonia.
5W1GP — Yoshiyuki Yamazaki, via JA6QCF, or Box 1625, Apia, Western Samoa.

Ernest 4S7EA is the only six metre operator in Sri Lanka, using an FT-726 and six element Yagi. He worked JA3, 4, 5 and 6 areas in Cycle 21. and holds a record by working JA1VOK in 1984.

RON WILKINSON ACHIEVEMENT AWARD

It certainly came as a surprise to read in AR that I had received the *Ron Wilkinson Achievement Award* for 1987. As I read the details of the announcement, I found myself saying "have I done all that?"

I am rather a strict disciplinarian, and whatever I undertake I try to do to the best of my ability. Whether I achieve anything approaching perfection can only be judged by others around me.

In the realm of VHF and UHF I see a challenge — something which has been there since my days on 288 MHz in the 1950s. After more than 30 years, the challenge still remains. I only hope I can be spared long enough on this earth to achieve a few more things on the bands above 50 MHz. It has always been my goal to have as many amateurs as possible operating on those bands, sharing experiences both technical and social, with particular encouragement being given to anyone prepared to build some of their own equipment.

Without using too much of the Editor's valuable space, may I say I have always seen my columns in AR as fulfilling a need in the VHF/UHF world, the place where the experiences of others can be shared round, the operators kept alerted of the approach of periods when enhancement of propagation could be expected, keeping the fraternity abreast of new operators or areas coming on the VHF/UHF scene. Much of this has only been possible from the countless numbers of letters and publications I have received since 1969. Everyone who writes does so because he/she has something worth writing about. I may condense what you say, but **all** letters are acknowledged through the columns of AR. It is this acknowledgment which keeps people writing to me. I am indeed grateful for your continuing interest, and for the many letters and on-air comments speaking favourably of the

columns. The various clubs who send their newsletters also perform a role in that I can often give a wider coverage to something which has special interest. As a matter of fact, my columns go overseas to a number of destinations and information extracted from them for their readers.

I have found quite a deal of pleasure in seeing the results of my earlier exhortations to achieve an Australia-wide beacon coverage, at least on 52, 144 and 432 MHz, and to a lesser extent on the higher bands, but they are appearing there! My trips around Australia and the talking with amateurs in more remote areas has seen the VHF/UHF coverage extended beyond the dreams of most of us That they have responded to my thoughts and suggestions is to their benefit in finding they can in fact cover a lot more territory then their apparent local topography would suggest.

I thank the VK5 Council of the WIA for my nomination and the WIA Executive for accepting it. I think Ron Wilkinson would say I haven't been slacking! I must have words with David VK5KK and Val for the sneaky way they obtained those photographs — Val said: "I have only a few shots left on this film so I might as well take something of you and your shack while we are here!"

Thanks again to everyone; it has been a united effort, albeit a rather costly one over the years, what with magazine subscriptions, postage, telephone calls (mostly STD), repairs to typewriter, etc, etc, but all done for the love of the game — I have many pleasant memories, both of the written word and the personal contacts with the people who have been my correspondents. Thanks also to those concerned with the production of AR over all those years, you have treated me very fairly and this has not gone un-noticed. I still have pleasant memories of the *Higginbotham Award* I received in 1974. Best wishes, and hoping to meet you on VHF/UHF!

CLOSURE

Closing with two thoughts for the month: "Happiness is often the result of being too busy to be miserable" and "A steering committee is four people trying to park a car!"

73 The Voice by the Lake

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EXAMINATION DEVOLVEMENT

— latest progress report

Jim Linton VK3PC
4 Ansett Crescent, Forest Hill, Vic. 3131

The Department of Transport and Communication (DOTC) has refined its planned devolution of amateur examinations following suggestions made at a series of public forums or seminars.

About 200 people attended forums held in February through to the end of March in Sydney, Melbourne, and Adelaide — each attracting 40 to 50, with lesser numbers in Perth, Brisbane, Launceston and Canberra.

Those attending were either keen to be actively involved running examinations or had some concern about the devolution process and sought information to allay their fears.

A few Technical and Further Education (TAFE) educators, who were not themselves radio amateurs, took part in the seminars to see how their college could be involved.

DOTC central office spokesman on devolution, Alan Jordan, said the general response was most positive.

"Many practical ideas came out of the seminars," Mr Jordan said.

A new development is the recent decision by DOTC to make entirely public soon its AOCP and Novice theory question banks and the Regulations examination question bank.

It had earlier been planned to issue the question banks only to examiners. However, Mr Jordan said: "The Department has decided, in response to the seminars, to put the question banks in the public domain — there was unanimous support for the move."

The seminars recognised that the question banks could not be expected to remain secure in the long term and would eventually leak out. But it was realistic to expect security will be maintained for actual examination papers.

The question banks will be available on floppy discs to those conducting examinations — and there will be a program for random generation of question papers.

All examination papers must be approved by the Department before being sat by candidates.

Examiners can write their own examination questions if they wish. However, papers compiled using only the question bank and the DOTC issued random generation program will make the approval process easier.

Mr Jordan told *Amateur Radio* magazine that DOTC would also be happy with the theory and regulations examinations being sat by candidates answering questions as they appeared on a VDU screen.

It was a suggestion which came from one of the seminars, and the Department agreed with this method of sitting an examination as long as there is a "hard copy" of the examinations sat, the candidate's answers, and results, he said.

Some other examination devolution update points arising from the seminars include:

✶ Approved examinations under devolution expected to occur after June 1, 1988.
✶ DOTC will supply examination application and result proformas to examiners.
✶ Indication that the costs of examinations to candidates may come down.
✶ Examinations to be more frequent and held at a larger number of centres.

One WIA Division indicated it could envisage holding simultaneous examinations at three centres on a Saturday morning, while someone else proposed running examinations weekly.

The approach to devolution varied throughout Australia. The amateur radio community in New South Wales is keen and large enough to take it on, whilst in Western Australia the TAFE system would appear to be the predominant organisation.

In Tasmania, there is some interest in having an Amateur Operators Certificate of Proficiency (AOCP) examination available to school students attempting a planned electronics course.

With a multiplicity of examination venues under devolution, examiners are unlikely to have a heavy workload.

Current DOTC quarterly examinations attract approximately the following numbers of candidates:

AOCP Theory — 330
Novice Theory — 180
AOCP Telegraphy — 210
Novice Telegraphy — 150
Regulations — 240

With examinations likely to be more frequent and held at more centres, candidate numbers should be easily handled.

Recent DOTC examination statistics also indicate a continuing trend to upgrade from the Novice level.

The Regulation examination numbers can be taken as a rough guide to the actual number of people seeking to enter our hobby, since that examination is a prerequisite for all three grades of licence.

Some 30 percent of candidates fail the Regulations examination, but candidates should be better prepared for this examination if they study the question bank and the replacement for the *Amateur Operators Handbook* which is to be issued shortly.

Unresolved matters DOTC are still considering include:

✶ Should questions generated by teaching institutions be automatically added to the public domain DOTC question banks?
✶ Are detailed guidelines necessary for examiners on how to write multi-choice questions?

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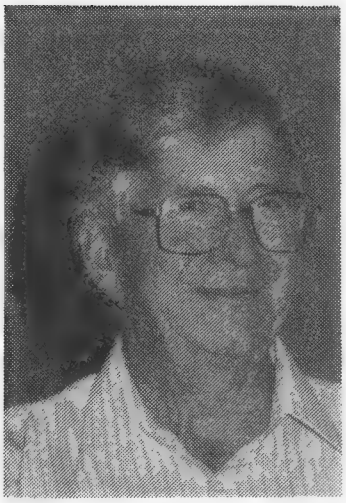
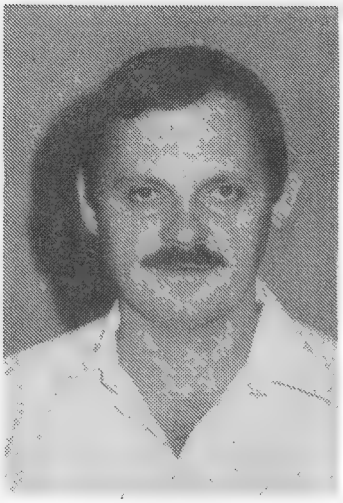
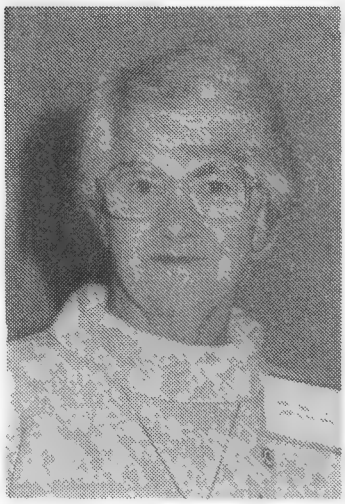
Photographs courtesy Barrie Bunning



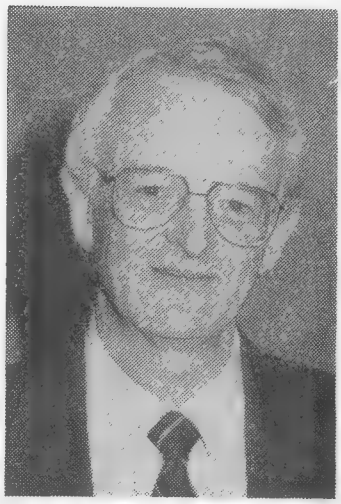
Allan VK3AE.
Federal Executive Member.



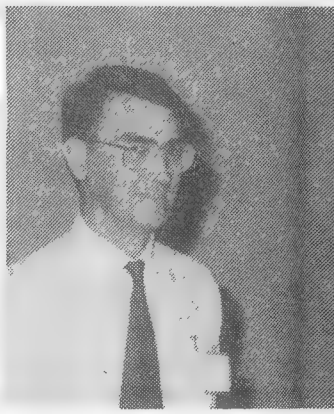
Peter VK3ZPP.
VK3 Federal Councillor.



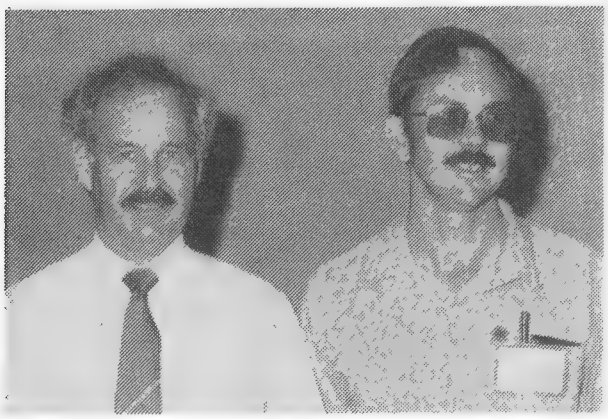
Brenda VK3KT.
Federal Executive Member &
Education Officer.



Bill VK3ARZ.
Acting Federal Treasurer.



Bruce VK6OO, VK6 Alternate Fe
VK6NE, VK6 Federa

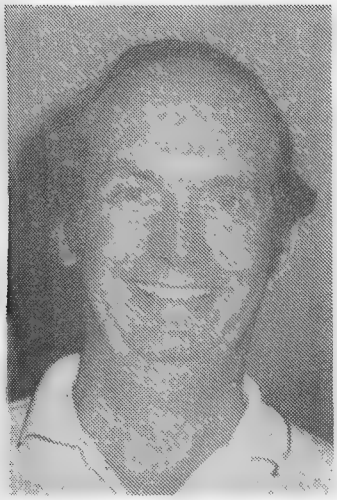


Terry ZL3QL, President NZART & Alan ZL1AMW,
Councillor NZART.

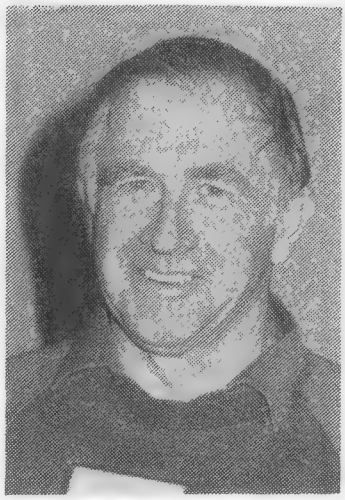
52ND WIA FEDERA
YOUR REPRES

Peter VK7PF, VK7 Federal Councillor & Alan VK7AV, VK7
Alternate Federal Councillor.

George VK1GB, Federal Executive Member & VK1
Official Observer, Kevin VK1OK, VK1 Federal Councillor,
& Alan VK1WX, VK1 Alternate Federal Councillor & VK1
President.

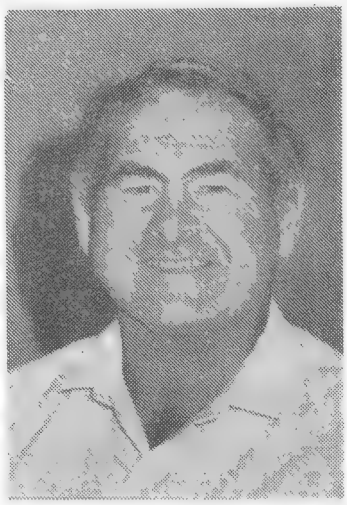


Peter VK3YRP.
Federal President 1988-1989.

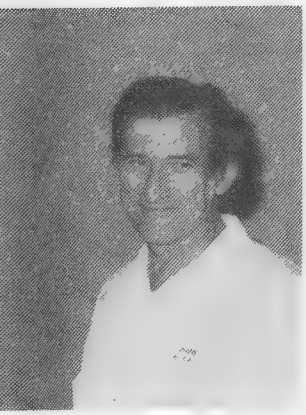


David VK3ADW.
Immediate Past-President &
Federal Executive Member.

Bill VK3ABP.
Federal Executive Member &
AR Editor.



Ron VK1RH.
Vice-President 1988-1989 &
WICEN Co-Ordinator.



nate Federal Councillor, & Neil
Federal Councillor.

NOTE: Barry VK3XV, was not available when the photographs were taken.

Tim VK2ZTM, 1st VK2 Alternate Federal Councillor, Jeff VK2BYY, VK2 Federal Councillor & Roger, 2nd VK2 Alternate Federal Councillor.

RAL CONVENTION
RESENTATIVES

John VK4QA, VK4 Official Observer, David VK4YW, VK4 Alternate Federal Councillor & Guy VK4ZXZ, VK4 Federal Councillor.

Bill VK5AWM, Federal Executive Member & VK5 Alternate Federal Councillor, & Don VK5ADD, VK5 Federal Councillor.

QSLs FROM THE WIA COLLECTION

Ken Matchett VK3TL
PO Box 1, Seville, Vic. 3139

The two QSL cards featured this month are amongst the most historic documents in the history of Australian radio. The station 8AB-8AC was licenced to the Reverend John Flynn (known as Flynn of the Inland). A5AX was the call sign of Flynn's co-worker, Alf Traeger, pioneer of the pedal wireless.

John Flynn was born at Moliagul, Victoria, in 1880 and rose to become the Moderator General of the Presbyterian Church. His great aim was to establish a network of Australian Inland Mission (AIM) hostels or nursing homes throughout the outback. The 8AB station was, in fact, located at the AIM, Alice Springs. It was what was then called "the Mother Station", that is, the base station, the separate call sign 8AC being allocated to Flynn's mobile station. It was not uncommon in the early days of radio to have one call sign for the home QTH and another one when operating mobile. This obviated the necessity of obtaining the necessary permission from the licencing authorities every time one wished to operate mobile.

Flynn's problem was to provide outback stations with inexpensive, foolproof lightweight wireless sets (capable of both transmission and reception) that could be used by the inexperienced. These also had to have their own power unit so that they could be used anywhere. At the time, no such set was available. Later, Flynn conceived the idea of running a generator off the engine of his old Dodge car, but this was only partly successful. Traeger solved the problem with his pedal generator which enabled the operator to have his hands free.

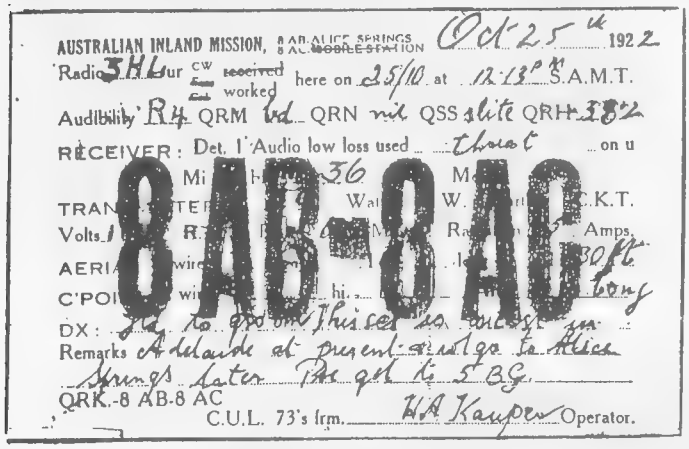
In 1912, Flynn had written a report upon the need for communication in the outback, which eventually led to the formation of the AIM. In 1919, there was nothing but the AIM nursing hostel at Oodnadatta and one outback Northern Territory hospital, but by 1939, there were 13 hostels and hospitals throughout the Inland. In 1921, John Flynn arranged a wireless demonstration for the AIM and in 1925, he was made a member of the Wireless Institute of Australia. It was in this year that he met Alf Traeger, and in October 1926 Alf joined him as his wireless expert.

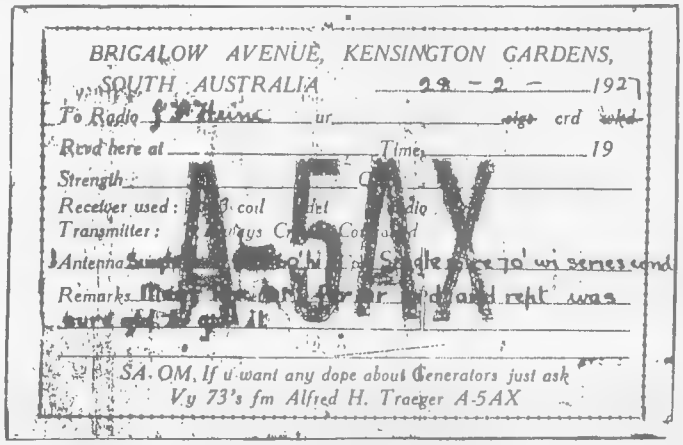
In 1930, Traeger commenced investigation into his "typewriter" Morse key, a device which enabled inexperienced operators to send Morse messages. Some 70 machines were produced and, in 1932, ground-air communication was proved to be possible. In the same year, radio telephone was introduced. This was a tremendous step forward and the flow of orders for new sets became so enormous that Alf Traeger founded a company to take care of them. When Traeger was not travelling the outback installing and servicing radios, he was toiling in his Adelaide workshop.

The 8AB QSL shows that the station was using the popular Hartley CKT (circuit) with power of 50 watts. Although the wavelength of the transmission is given here as 36 metres, the station also used spark transmissions on 80 metres with which to communicate with Traeger in Adelaide. The QSL is dated October 1922, but this date must be incorrect for several reasons. The postmark on the reverse side of the card confirms this — it is dated October 1925. The QSO was between Adelaide and Melbourne, the Victorian operator being the late Alan Hutchings, then 3HL, one of the most successful Australian operators of the period. The QSL is signed by Harry Kauper who, like John Flynn and Alf Traeger, played a most important role in the field of experimental radio. It was Harry Kauper who, during World War I, invented a timing mechanism that enabled bullets to be fired through the revolving propeller of an aircraft. Being the radio engineer at the Australian Broadcasting Commission's Broadcast Station, 5CL, Adelaide, he was well qualified to assist in transmissions between Adelaide and the outback. It was, in fact, through Harry that Flynn and Traeger first met when Kauper recollected that he, himself, had received assistance from the young Adelaide electrician.

Alf Traeger's QSL, A5AX is of a period a little later than the 8AB-8AC QSO, the A (Australia) in the call sign being used by then as a prefix to the simple one numeral/two letter call sign. Traeger was an expert in the design of motors and generators. Interesting is his comment on the QSL, "If u want any dope about Generators just ask".

The QSL was sent in reply to a SWL report by John Heine (now VK3JF) and originated from his factory-home QTH in the Adelaide suburb of Kensington Gardens, where his experimental work did so much to establish a "mantle of safety" for the pioneers of Australia's outback.





Try This!

Tom Laidler VK5TL
18 Albion Avenue, Glandore, SA. 5037

HOLDING SMALL NUTS IN AWKWARD PLACES

From time to time various ideas have been brought forward to overcome this problem. Here is another!

In most kitchen drawers there is a plastic tube-type device which, when the end is pressed, extends a three pronged claw affair.

Its normal function is that of picking up pickled onions, etc, from the bottom of bottles.

These usually cost less than a dollar and can be used to hold a small nut in place whilst a screw is fed into it.

Alternatively, if you are financially sound and willing to pay the price, a jewellery tools supplier will furnish a similar tool for a higher price. This is if all-metal construction, but the general operation is identical with similar results achieved.

The operation is clean and eradicates the need for an adhesive in any form. These devices also allow penetration to a depth of about six inches (150 mm) which is a little further than individuals fingers.

Contests

Frank Beech VK7BC
FEDERAL CONTEST MANAGER
37 Nobelius Drive, Legana, Tas. 7251

CONTEST CALENDAR

JUNE 1988
4 — 5 RSGB National Field Day Contest
4 — 6 ANARTS RTTY Contest (Rules this issue)
18 — 19 All Asian Phone Contest
25 — 26 ARRL Field Day Contest

JULY 1988
— 1 Canada Day Contest
9 — 10 IARU HF World Championship
— 10 ARCI QRP CW Sprint
16 — 17 CQ magazine WW WPX VHF Contest

AUGUST 1988
— 6 YLRL YL/OM SSB Sprint
13 — 14 VK Remembrance Day Contest
27 — 28 All Asian CW Contest

SEPTEMBER 1988
24 — 25 CQ WW RTTY Contest

CQ M CONTEST 1987 RESULTS

The results of the 1987 CQ M Contest have arrived. The Oceania winners are as follows:
Single Operator, Multi-Band — VK5BS with 637 points
Sing Operator, Single Band — VK4TT with 4579 points.

Congratulations to you both and your certificates should be delivered shortly.

ANARTS RTTY CONTEST — 1988 RULES

(Courtesy CQ magazine)

PERIOD: 0001 UTC Saturday until 2359 UTC Sunday, June 4 to 6, 1988.

The Australian National Amateur Radio Teleprinter Society is running this contest. Not more than 30 hours of operating time is permitted for single operator stations. Rest periods can be taken at any time and mist be indicated in the log. Multi-operator stations can operate the full 48 hours.
CLASSES: Single operator. Multi-operator single transmitter. SWL.
BANDS: All five bands, 3.5 to 28 MHz, in the portions permitted for RTTY. (No WARC bands).
EXCHANGE: RST, UTC time and Zone.
SCORING: Points as per CARTG Zone Chart (same as the Exchange Point Table in this issue). Multiply point total by the number of countries worked on each band. Multiply that total by the number of continents worked — maximum six.
BONUS: Add 100 points to the above score for each VK worked on 14 MHz; 200 points if on 21 MHz; 300 points if on 28 MHz; 400 points if on 7 MHz and 500 points on 3.5 MHz.
EXAMPLE: Zone QSO points times Countries times Continents plus bonus points for your final score. A station may be worked on each band for QSO and multiplier credit, but continents count once only. Country multiplier is determined by the ARRL list plus VK, ZL, JA, VE/VO and W/K call areas.
AWARDS: Certificates to first three place winners on a world and country basis. Scoring is rather complicated. Therefore a summary sheet showing the scoring etc, is a must.
LOGS: Must be received by September 1, and should be posted to: W J Storer VK2EG, 55 Prince Charles Road, Frenches Forest, NSW. 2086.

RSGB NATIONAL FIELD DAY CONTEST

The RSGB National Field Day Contest will be held from 1500 UTC, Saturday June 4, to 1500 UTC, Sunday June 5. CW only in the 1.8, 3.5, 7, 14, 21 and 28 MHz bands. Contest preferred segments as recommended by the IARU must be used; ie 3.510-3.560 and 14.010-14.070 MHz.
EXCHANGE: RST and serial number beginning with 001.
LOGS: Separate logs must be used for each band.

While overseas stations are not eligible to enter the NFD, check logs are very welcome. A certificate will be awarded to the overseas station on each continent whose log shows the most points contributed to competitors.
ADDRESS: Logs to HF Contest Committee, PO Box 73, Lichfield, Staffs, WS13 6UJ, England.

I have included these details for the RSGB NFD Contest as a reminder to those award hunters who are looking for the British Counties Award. All counties will be activated by numerous stations so this is a once a year opportunity to catch up with those wanted counties the easy was on CW.

WORLD TELECOMMUNICATIONS DAY CONTEST — Results 1987

WINNERS
ITU PLAQUE
Country — Brazil
Association — Liga de Amadores Brasileiros de Radio Emissao — LABRE
MEDALS
PHONE: ZV2BW (16 252 points); H44JA (3780 points); JH4UYB (252 points)

EXCHANGE POINTS TABLE

YOUR zone \ CORRESPONDENT zone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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38	47	36	50	41	39	43	38	36	32	31	23	27	24	26	25	27	27	31	38	22	19	22	28	32	40	27	32	26	24	32	56	34	22	18	15	8	7	2	6	32
39	44	37	52	44	42	48	44	41	38	38	29	33	30	26	24	25	23	27	33	20	15	16	22	25	33	20	26	19	20	29	51	33	23	16	19	11	5	6	2	32
40	15	6	20	14	13	22	22	18	21	29	27	34	34	6	8	9	12	14	16	12	19	24	20	25	25	29	30	34	44	48	28	50	10	16	20	24	28	32	32	2

Exchange Points Table.

CW: OK2QX (9963 points); K8CW (8720 points); ZV2CW (5670 points)
PARTICIPANT COUNTRIES LIST (by prefix):
BV, BY, CE, CN, CO, CP, CT, CX, DJ, DU, EA, EA8, EI, F, FS, G, GI, GM, GW, H4, HA, HB, HH, HL, HP, I, IS, JA, K/W, KH6, KP4, LA, LU, LZ, OE, OH, OKM ON, OZ, P29, PA, PY, SM, SP, SV, TA, UA1/6, OA0, UB5, UC2, UD6, UP2, UQ2, V85, VE, VK, VP2M, VU, Y2, YB, YO, YS, YU, YV, ZB, ZP, ZS, 3A, 4S, 4X, 5A, 5N, 5T, 6W, 7X, 8P, 9V, 9Y.

LABRE did not supply a list of the VK entrants.

The rules for the 1988 Remembrance Day Contest will be published next month, and, as usual about this time of year, I have taken the opportunity to publish a basic set of ground rules that will apply for future WIA contests and these will be noted by all contestants. Please read them carefully, they are quite straightforward.

CONTEST DISQUALIFICATION CRITERIA

A standardised approach is taken to the disqualification of logs entered in all of the contests which come under the direct control of the Federal Contest Manager appointed by the Federal Executive.

It is suggested that you take note of this particular issue of the magazine for reference to these general rules in the case of all contests for the ensuing year. Details are as follows:

DISQUALIFICATION: A entry in WIA conducted contests may be disqualified if, upon checking the logs, it is necessary that the overall score be reduced by more than two percent. Score reduction does not include correction of arithmetic errors. Reductions may be made of unconfirmed QSOs or multipliers, duplicate QSOs or other scoring discrepancies.

An entry will be disqualified if more than two percent duplicate QSOs are detected as being claimed for credit.

For each duplicate or mis-copied call sign removed from the log by the contest manager, a penalty of the deletion of three additional QSOs of equivalent value to the offending claim may be applied.

The penalty will not be considered as part of the two percent disqualification criterion.

If a participant is disqualified under these aforementioned provisions that operator will be barred from entering the contest for that particular mode in the ensuing year: eg Disqualification from the 1988 RD Contest, phone section will prohibit an entry for the 1989 RD Contest, phone section. However, participation in the 1989 RD contest's CW section would be allowed.

Logs which are very untidy. illegible or incorrect in layout to a major degree may also be disqualified. The call signs of disqualified participants may be listed in *Amateur Radio* magazine, together with the contest results.

GENERAL RULES FOR WIA CONTESTS

CONDITIONS OF ENTRY:

a. Entrants must operate in accordance with the terms of their licence.

b. Entrants may only use one call sign during the duration of a contest.

c. Each entrant agrees to be bound by the provisions, as well as the intent of these general rules and the specific rules published for each contest.

d. All entries become the property of the WIA. In the event of a dispute, the ruling of the Federal Contest Manager shall be final.

e. Entries may be disqualified for failure to observe the general rules or the specific contest rules.

f. Entrants must operate from a single location during a contest.

CLASSES OF ENTRANT

a. Unless otherwise stated in specific contest rules, only single operator entries will be accepted. A single operator station is one manned by an individual operator *who receives no assistance whatsoever during the contest period.*

b. For certain contests, multi-operator entries are permitted. These entries will be accepted subject to the contest declaration form being signed by one operator, who becomes the entrant and is responsible for the entry. The entrant is required to ensure that the operators call sign is shown on the log for the entry for each contact, or group of contacts, made by that operator and that the contest rules have been observed. Failure to observe these requirements will result in the entry being disallowed.

c. Entrants in field day events may not operate from any permanent building or structure, or use power from a public mains supply. Power may only be derived from a portable generator driven by a motor, wind or manpower on the site, or from solar cells, batteries or accumulators.

ENTRY PROCEDURES

a. Each entry will consist of a contest log, a cover sheet, summary sheet. The cover sheet must include a statement that the rules and spirit of the contest have been complied with.

b. Logs must be written or typed on one side only of WIA contest log sheets or on standard A4 sized paper using ink.

c. Logs must be kept and entries submitted in UTC.

d. Any log that is incomplete or illegible will not be accepted as an entry.

FOURTH ANNUAL CQ WORLD WIDE VHF WPX CONTEST

Held from 0000 UTC Saturday, July 16, 1988 to 2400 UTC Sunday, July 17, 1988.

CONTEST PERIOD: 48 hours for all stations, single or multi-operator. Operate any portion of the contest period you wish.

OBJECTIVES: The objectives of this contest are for amateurs around the world to contact as many amateurs as possible in the allotted 48 hour period, to promote VHF/UHF activity, to allow VHF operators the opportunity to experience the enhanced propagation available at this time of year, and for interested amateurs to collect VHF prefixes for award credit.

BANDS: The 50, 70, 144, 220, 432, 902 and 1296 MHz bands may be used, as authorised by local law and license class.

TYPE OF COMPETITION:

Single operator — a. all band; b. single band; c. all band, low power; d. single band, low power.

Multi-operator — a. all band; b. single band.

Portable (with temporary power source only).

FM only.

The "portable" category is for single or two-operator stations. Low power is defined as 30 watts PEP output or less. Stations may select one category of competition only. All transmitters must be located within a 500 metre diameter, or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitters.

EXCHANGE: Call sign and Maidenhead locator grid square (four digits, eg FN20). If grid square is not known, station location with enough specificity to determine the proper grid may be recorded instead. Signal reports are optional and need not be included in the log entry.

SCORING: One point per QSO on 50, 70 and 144 MHz; two points per QSO on 220 and 432 MHz; four points per QSO on 902 and 1296 MHz. Work stations once per band, regardless of mode. Multiply total QSO points times the total number of prefixes (PX) worked. This differs from the scoring for the CQ HF WW WPX Contest, where a prefix counts only once regardless of band.

Example: W1XX works stations as follows:
37 QSOs and 12 PXs on 50 MHz
45 QSOs and 18 PXs on 144 MHz
26 QSOs and 10 PXs on 220 MHz
38 QSOs and 11 PXs on 432 MHz
6 QSOs and 3 PXs on 1296 MHz
Total Score for W1XX is 234 QSO points x 54 PX = 12 636

MULTIPLIERS: The multiplier is the number of prefixes worked, additive on a band-to-band basis. A prefix is considered to be the number/letter combination which forms the first part of an amateur radio call sign (N1, W2, WB3, K4, AA6, WD8, 4X4, DL7, G3, IT9, NP2, PY7, VK4, Y32, Y33, KT4, JE3, etc, etc). A station in a call area different from that indicated by his call sign is required to sign portable. This applies even for home stations, eg WB2OTK has a licensed station in SC, but is required to sign /4 for contest purposes only. In all cases, the portable prefix is the multiplier. Example: KT2B/3 counts as KT3; WC2K/VE3 counts as VE3; KR2Q/C6A counts as C6A; 4X4FN/W2 counts as W2. Special event, commemorative and other unique prefix stations are encouraged to participate. A station who changes location during the course of the contest is free to contact as many other stations as he wishes; however, the moving station counts as only one QSO and PX unless he changes call areas during the course of operations. Example: K2SMN operates from the NJ/PA border; he may be counted as K2SMN for one QSO and PX (K2) by all those he contacts from NJ. He may be counted as K2SMN/3 for one QSO and one PX (K3) by all those he contacts from PA, including stations previously worked from NJ. Changing "grid squares" does not justify a new contact.

AWARDS: Engraved trophies will be awarded to the top-scoring stations in each category and major geographic area where competition is indicated. Parchment certificates suitable for framing will be awarded to the top-scoring stations in each category and minor geographic area where competition is indicated. Certificates may also be awarded to other top-scoring stations who show outstanding contest effort. Major geographic areas include North America, Europe and Japan as of this writing, but may be extended to include other areas as justified by competitive entries. Minor geographic areas include States (US), provinces (Canada), countries (Europe) and call areas (Japan), and may also be extended to include other subdivisions as justified by competitive entries.

Logs must be postmarked no later than August 31, 1988, to be eligible for awards. Logs should be mailed to the CQ VHF WPX Contest, C/-S C O R E, PO Box 1325, Eatontown, NJ, 07724, or to CQ Magazine, 76 North Broadway, Hicksville, NY 11801.

29th ALL ASIAN DX CONTEST — 1988

Supported by the Ministry of Posts and Telecommunications of Japan

The purpose of this contest is to enhance the activity of radio amateurs in Asia and to establish as many contacts as possible during the contest periods between Asian and non-Asian stations.

CONTEST PERIOD:

Phone — 48 hours from 0000 UTC June 18, 1988 to 2400 UTC June 19, 1988.

CW — 48 hours from 0000 UTC August 27, 1988 to 2400 UTC August 28, 1988.
BANDS: Amateur bands under 30 MHz.
ENTRY CLASSIFICATION:
1 Single operator, 1.9 MHz band (CW-only).
2 Single operator, 3.5 MHz band (including 3.8 MHz band, etc).
3 Single operator, 7 MHz band.
4 Single operator, 14 MHz band.
5 Single operator, 21 MHz band.
6 Single operator, 28 MHz band.
7 Single operator, Multi-band.
8 Multi-operator, Multi-band.
POWER, TYPE OF EMISSION and FREQUENCIES: Within the limits of own station licence.
CONTEST CALL: Phone . . . CQ Asia. CW . . . CQ AA.
EXCHANGE
For OM stations — RS(T) report plus two figures denoting operator's age.
For YL stations — RS(T) report plus two figures 00
RESTRICTIONS ON THE CONTEST
No contact on cross-band.
For participants of single operator's entry — transmitting two signals or more at the same time, including cases of different bands is not permitted.
For participants of multi-operator's entry — transmitting two signals or more at the same time within the same band, except in case of different bands, is not permitted.
POINT AND MULTIPLIER:
Contacts among Asian stations and among non-Asian stations will neither count as a point or a multiplier.

For non-Asian stations — Points. . .a perfect contact with Asian stations (excluding US auxiliary military radio stations in the Far East, Japan) will be counted as follows for point scores: *1.9 MHz band . . . 3 points; 3.5 MHz band . . . 2 points; other bands . . . 1 point.*
Multipliers are the number of different **Asian Prefixes** worked on each band, according to the WPX Contest rules. Eg JS1ABC/7 will count for prefix JS7.
SCORING: The sum of the contact points on each band times the sum of the multipliers on each band.
INSTRUCTIONS ON THE SUMMARY AND LOG SHEETS
Summary sheet — write in your declaration and signature to give evidence of following the rules of the contest, together with your DXCC country, call sign, entry class, multiplier by band, point by band and total score.
Log sheets — use a separate sheet for each band and keep all times in UTC. Fill in the blanks of multiplier by countries or prefixes only the first time on each band.
AWARDS: Certificates will be awarded to the highest scorers in each category on each continent and medals will be awarded to highest scorer in the single operator multi-band and multi-operator multi-band sections.
REPORTING: Submit a summary sheet and logs of only one classification to JARL, All Asia DX Contest, PO Box 377, Tokyo Central, Japan. Please indicate phone or CW on the envelope. Envelopes should be postmarked no later than July 30, 1988 for the phone-section and September 30, 1988 for CW.
DISQUALIFICATION: Violation of the contest rules, false statements in the report or taking points from duplicate contact on the same band in excess of two percent by the total will be deemed reasons for disqualification.
ANNOUNCEMENT OF RESULTS: Phone about February 1989 and CW about April 1989.
COUNTRIES LIST OF ASIA: A4, A5, A6, A7, A9, AP, BV, BY, EP, HL/HM, HS, HZ/7Z, JA-JS/7J, JD1 (Ogasawara Island), JT, JY, OD, S2, TA2-8, UA/UN/UV/UW, UZ9-0 (AsRSFSR), UD, UF, UG, UH, UI, UJ, UL, UM, VS6, VU, VU (Andaman & Nicobar Islands), VU (Laccadive Island), XU, XW, XX9, XZ, YA, YI, YK, ZC4, 1S (Spratly Island), 3W/XV, 4S, 4W, 4X/4Z, 5B4, 7O (S Yemen), 8Q, 9K, 9M2 (W Malaysia), 9N, 9V (Singapore), J2/A (Abu Ail)

NATIONAL CW AND PHONE SPRINTS

The Adelaide Hills Amateur Radio Society Inc is pleased to announce the Third Annual National Sprints — a pair of "quickie" contests for CW and phone operators, to be held during July 1988. The rules for the Sprints will be similar to those for last year.

The Sprints are open to all operators in VK, ZL, and P2 call areas.

Sprint period is one hour.

Only VK, ZL and P2 contacts can be scored.

A new section for SWLs has been added to foster interest by a group of radio enthusiasts who the Society recognises may be some of our future amateur operators.

The National Sprints are endorsed and supported by the South Australian Division of the Wireless Institute of Australia which will provide certificates and trophies.

The reasoning behind the National Sprints is simple — there are too many "big" contests each year; they require a lot of time and the rules are complex, thus discouraging many operators from participating. The National Sprints are short,m sharp and simple, requiring a minimum of time while providing a significant operating challenge.
OBJECT OF THE SPRINTS: The operator's basic goal in the Sprints is to make (or SWLs log to hear) as many contacts as possible without duplication during an hour of operation on a single band. Any contact with a VK, ZL or P2 station on 80 metres during the Contest Period can be counted, but a station may be claimed only once.
ELIGIBILITY: The National Sprints are open to any licensed amateur or group of amateurs using a single call sign; eg club stations, or SWL, anywhere in Australasia (VK, ZL and P2 call areas).

CONTEST PERIOD:
1200 to 1300 UTC, July 2, 1988 (CW only)
1200 to 1300 UTC, July 9, 1988 (Any legal phone mode)
FREQUENCIES:
For the CW Sprint, frequencies between 3.500 and 3.700 MHz may be used.
For the Phone Sprint, frequencies between 3.535 and 3.700 MHz may be used.
CONTEST CALLS: CQ Sprint or CQ Test or CQ Contest.

Ian Buchanan VK2KL, was the top score overall trophy winner in the Phone Section of the 1987 Sprint.

John McMillan VK2BAT, winner of the CW Section of the 1987 Sprint as the top overall score trophy winner.

EXCHANGES: Minimum exchange for a valid contact will consist of signal report and a three digit serial number. The serial number may start at any number between 001 and 999, but will revert to 001 if 999 has been reached.
LOGS: Contest logs must show for each contact the time (UTC), call sign of station worked, (both call signs heard for SWLs), report/serial number given and report/serial number received. Each log must be accompanied by a cover sheet showing the date and name of the Sprint (CW or Phone), the total number of contacts claimed, and a statement that the operator has abided by the rules of the contest, signed by the operator/s. Any special conditions such as QRP or mobile operation should be mentioned in the statement. Any comments you may wish to add will be welcomed by the Society.

Logs are to be in the hands of the Society no later than Friday, August 12, 1988, addressed to:
National Sprint Manager, John Hampel AX5SJ, c/-AHARS, PO Box 401, Blackwood, SA. 5051.
Endorse the envelope CW, Phone or SWL Sprint.
AWARDS: Certificates will be awarded to the highest scorer in each Australian call area, ZL and P2 for both the CW and the Phone Sprints. Trophies will be awarded to the outright winner of each Sprint.

Certificates may be awarded to other operators whose performance was, in the opinion of the organisers, exemplary.
SWL: Certificates will be awarded to the highest listener log in VK, ZL and P2 for both the CW and Phone Sprints.

Any entry which is clearly in violation of the rules or spirit of the Sprints, or which contain an excessive number of claimed duplicate contacts (this does not refer to duplicates which have been indicated as such and are not claimed), may be disqualified.

The decision of the Society in respect of the interpretation of these rules, granting of awards, or disqualification will be final.

PACKET TNC KIT

The Melbourne Packet Radio Group is moving ahead with its low cost, high performance packet radio TNC.

The TNC has reached production prototype stage, and hopefully will be released soon in kit form.

Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA. 5014

AWARDS ISSUED IN MARCH 1988

HAVKCA
137 John L Parsons

DXCC UPDATES IN MARCH

VK4AK	314/324 phone	316/326 open
VK5EE	279 phone	
VK2BQS	110 RTTY	173 open
VK1ZL	260 phone	

VANUATU AMATEUR RADIO SOCIETY AWARD

This award is a standard size certificate printed in the four colours of the Vanuatu flag and contains a scale map of the archipelago.

1. The award is offered to all licensed amateur radio operators who qualify.
2. To obtain this award, the amateur operator must have made not less than six contacts with Vanuatu stations carrying the YJ8 call sign who are members of the Vanuatu Amateur Radio Society. Contacts made from Vanuatu Independence Day (July 30, 1980) are acceptable.
3. Contacts may be made by CW, SSB or RTTY.
4. Two contacts with any one YJ8 station will be accepted providing these contacts are made on different days, different bands, or by different modes.
5. A log extract from the applicant showing the contacts claimed and certified by the signatures of two other licensed amateurs will be accepted. This record will be checked with the logs of the YJ8 stations worked.
6. Endorsements for all one mode, all one band or additional stations worked are available.

Cost of the award is US$2 (or near equivalent) or 10 IRCs.

All inquiries and submissions should be addressed to the Awards Manager, VARS, PO Box 665, Port Vila, Vanuatu.

YARC AWARD

The Yeovil Amateur Radio Club are offering a very attractive award to all transmitting or SWL stations.

The rules are as follows:

1. To work or hear any 22 British stations with the last letter of the call to make up the words *YEOVIL AMATEUR RADIO CLUB*. For example: G3. . Y, GM2. . E, etc, etc. They can be G, GD, GI, GJ, GM, GU, GW, or GB special calls.
2. Valid contacts from July 1, 1983, will count — any band, any mode.
3. No QSLs to be sent, only a certified list of QSOs (Copy of Logs) signed by an official radio club or by two active amateurs.
4. This award is open to all licensed radio amateurs or SWLs in any country.
5. Send certified list together with 10 IRCs or US$2 or UK£1 to the Awards Manager, F W Parkhurst, 56 Cromwell Road, Yeovil, Somerset, England. BA21 5AW.
6. A total of 22 QSOs are required and consist of: 3 ending in A; 1 B; 1 C; 1 D; 2 E; 2 I; 2 L; 1 M; 2 O; 2 R; 1 T; 2 U; 1 V; and 1 ending in Y.

—This information was contributed by Joy Collis VK2EBX, of Yeoval NSW, a honorary life member of the Yeovil (Somerset) Club

AUSTRALIAN BICENTENARY 1788-1988 NATIONAL CAPITAL CERTIFICATE

Australia is celebrating the Bicentenary of the first European settlement in 1988. Throughout 1988 there will be numerous major events to commemorate special features of our history or our society. Radio amateurs will join in this celebration through operating in conjunction with other events or staging their own special event and by using special call signs. During 1988, all Australian amateurs may use the AX prefix to replace the VK prefix in their call sign.

Also, during 1988, there have been a limited number of special event call signs issued to help celebrate the Australian Bicentenary. The Australian Department of Transport and Communications has provided **one** call sign with a VI88 prefix to each Australian State and Territory, as follows:

STATE/TERRITORY	CALL SIGN
Australian Capital Territory	VI88ACT
New South Wales	VI88NSW
Victoria	VI88VIC
Queensland	VI88QLD
South Australia	VI88SA
Western Australia	VI88WA
Tasmania	VI88TAS
Northern Territory	VI88NT
Polonia Radio Club, Victoria	VI88ABC
World Expo, Brisbane	VI88XPO

In Canberra, the ACT Division of the Wireless Institute of Australia has been organising several special events for the Bicentenary. The events that have already passed include:

AUSTRALIA DAY — VI88ACT and many of the other VI88 stations made numerous contacts on January 26, plus all of the VI88 stations talked with each other at 0900 UTC on 14.188 MHz. It was a real "Aussie" get-together!pe CANBERRA DAY — On the weekend of March 19, 20, the Annual John Moyle Field Day Contest was held. March 21, was Canberra Day, a holiday in the ACT, and VI88ACT was again active to help achieve success in the contest and to provide many with a special VI88 contact.

The major event was the opening of the new Australian Parliament House on May 9, 1988. Her Majesty, Queen Elizabeth II, opened the new building. Permission was obtained to operate an amateur radio station, and the call sign VI88ACT, from the new Parliament House site on Opening Day.

The ACT Division is offering a special QSL card and Certificate for contacts during the Bicentenary. Each VI88ACT contact will qualify for a QSL. In addition, there is an Australian Bicentenary National Capital Certificate. The artwork of the QSL and Certificate is very similar making the two a "matching set" which should be very distinctive and particularly attractive. The rules for obtaining the certificate follow.

The Australian Bicentenary National Capital Certificate was created to enable amateurs and SWLs world-wide to actively participate in Australia's Bicentenary celebrations from January 1 to December 31, 1988.

The Certificate depicts the Australian continent with images of significant events. 1788 is represented by the tall ships and establishment of the first settlement. 1988 is depicted by the National Capital's magnificent new Parliament House which was opened in May 1988. The test on the Certificate names the recipient, acknowledges participation in the Bicentenary and describes any endorsements claimed by the applicant.

The Certificate is conferred by the 1988 Bicentenary Committee, a sub-committee of the WIA, ACT Division. The aims of the 1988 Bicentenary Committee through its activities are to:

1. Stimulate widespread interest in the Australian Bicentenary;
2. Promote the awareness and use of amateur radio in Australia;
3. Encourage the widest possible use of all amateur modes and frequencies;
4. Encourage all VK1 amateurs to operate the call sign VI88ACT at least once during 1988.

QUALIFICATION

The following table and notes set out the criteria for qualification to receive the Australian Bicentenary National Capital Certificate:

1. POINTS REQUIREMENT

CATEGORY	SECTION	POINTS REQUIRED
1. HF (below 30 MHz)	VK Call Areas (not VK9/VK0)	50 points (Incl VI88ACT)
2. HF	Non-VK Call Areas (incl VK9/VK0)	20 points (incl VI88ACT)
3. VHF + (above 30 MHz)	VK Call Areas (not VK9/VK0)	50 points

The new Parliament House, Canberra.

4. VHF +	Non-VK Call Areas (incl VK9/VK0)	8 points

2. GENERAL NOTES

*Only contacts (or SWL reports) made during the period 1301 UTC, December 31, 1987 to 1300 UTC, December 31, 1988 are valid. (This period equates to 0001 hours January 1, 1988 to 2400 hours December 31, 1988, Australian Eastern Summer Time).

* Each application in Categories 1, 2 and 3 must include at least one of the Australian VI88 special event call signs. Those for HF must include a contact with VI88ACT.

* QSL card confirmation of contacts claimed is **not** required.

* Any VI88 special event call sign may only be claimed **once per band per mode.** Eg; Contact with VI88ACT on 20 metres SSB and 20 metres CW can be claimed as **two** contacts, or 10 points, because it is different modes on the same band.

* Any band and mode within the terms of the applicant's licence, is accepted.

* Requests for endorsements will be considered. Eg; If all points claimed are for contacts on a single band or mode, an endorsement to the Certificate would be possible.

* Contacts made by any terrestrial **voice** repeater method are **not** valid. Packet radio contacts using a digipeater or (several digipeaters) **are valid** contacts.

FOR HF OPERATION

Contact with any Australian call sign counts as one point; and

Contact with any Australian VI88 special event call sign counts as five points.

For VK operators only — All contacts, except for VI88 special event stations, are to be made with call areas **other than** the area from which the applicant is operating.

FOR VHF OPERATION

Contacts between stations up to 30 kilometres equals one point, and over 30 kilometres equals four points.

Contact with any Australian VI88 special event call sign counts as 10 points, ie VI88ACT or any other "VI88. . ." prefix.

COST

The cost of the certificate will be $A4 or seven International Reply Coupons (IRCs). Please include with application.

APPLICATION

Applications for the certificate should include the applicant's name and call sign (as they want it to appear on the certificate) and their return address.

Applications for the certificate should be in the form of a log extract showing **for each contact claimed** the call sign, the date and time (UTC) of the contact, mode and band used and the signal reports exchanges. All claims must be certified as a true and correct record of the log by at least one other licensed amateur other than the applicant. This requirement may be waived for applicants in remote areas — please attach an explanation.

Inquiries for further information should be directed to Philip Rayner VK1PJ, on (062) 92 3260 (home) or at the address below. Applications for the certificate should be sent to:

VI88ACT Awards Manager, GPO Box 600, Canberra, ACT. 2601.

—Contributed by Daniel Steiner VK1ST, Chairman, Bicentenary Sub-Committee

Queensland Police Department

Certificate of Appreciation

Be it known to all that this Certificate of Appreciation is presented to

DONALD ARTHUR HOPPER

for valuable assistance rendered to the Police Department of Queensland. Presented by the Acting Commissioner of Police on behalf of all officers of the Police Department.

Acting Commissioner of Police

Place BRISBANE

Date 16 MARCH 1988

SPECIAL AWARD RECIPIENT

Recently Don Hopper VK4NN, was awarded the Queensland Police Department's Certificate of Appreciation.

The citation reads as follows:

Donald Arthur Hopper is awarded a Certificate of Appreciation for valuable assistance rendered to Police in his capacity as an amateur radio operator.

On October 23, 1987, Mr Hopper learned of an injury sustained by an elderly woman on board a yacht some 200 kilometres off the coast from Brisbane.

Over the ensuing three days he made radio contact with the yacht and relayed reports of the injured woman's condition and the vessel's position to the Police Operations Centre, Brisbane, and the Sea Safety Operations Centre, Canberra. He also took it upon himself to liaise with various other persons, including Customs and Health Department officials, to arrange for the woman's medical evacuation to a Brisbane hospital.

As a result of Mr Hopper's diligent efforts the evacuation was successfully completed without incident on the evening of October 25, 1987.

Mr Hopper's voluntary radio monitoring on this, and numerous other occasions over a number of years, have been greatly appreciated by Police and members of the rescue services. His actions in this role have been of immense help to persons at sea requiring rescue or the provision of other assistance.

By his highly commendable and public spirited actions he is most deserving of this award.

EXAMINATION EXEMPTIONS

The holders of certain qualifications are exempt from sitting the Novice and AOCP theory examinations.

DOTC advises that those holding BOCP, TVOCP, Bachelor of Engineering in Communications and Electronics, Certificate of Technology in Communications and Electronics, and Telecom Radio Technician Certificates are exempt.

Holders of those qualifications need only sit the amateur regulations examination to obtain an Amateur Operators Limited Certificate of Proficiency.

If they additionally pass the five words per minute Morse code sending and receiving examinations, a combined Limited/Novice licence can be issued, and the 10 words per minute code examinations gives them the Full Call.

Perhaps you know someone with such a qualification? Help them pass the regulations examination and thus create a new radio amateur!

MURPHY'S DEPARTMENT

It was never our intention that this should become a regular feature! But Murphy's Law ("If anything can go wrong, it will") has once again been demonstrated rather impressively in the March and April issues. A letter from David VK2KFU, points out the errors on pages 4 and 28 of the February issue. These were dealt with at some length last month. David also comments on three articles in the March issue, on pages 20, 29 and 37. The latter two were also the subject of a phone call to me from Ron VK3RN.

I am happy to say that in at least one case there is no serious problem. David was of the opinion that some of the component values in the 6AU6, 6AQ5 amplifier on page 20 were incorrect and could lead to failure of the 6AU6. I can assure you all that there is a good deal of latitude permitted in these old valve circuits, and the values shown on the diagram are quite okay. If your shack is a museum like mine and actually contains a valve data book, reference to it may show that the 1M screen resistor could be 1.5M and the 1K cathode resistor could be 1.5K, but the difference in practice is trivial.

All is not so good with the circuit on page 29. The 0.002 uF capacitor shown between pin 9 and the 27K should be between pins 1 and 9. This is almost certainly a post-editorial drafting error, but as David says the result would be HT on the pentode grid, followed by "instant destruction". I might query how instant? Valves in fact are much more "forgiving" devices than transistors, and even if its plate went to the proverbial cherry-red for a few seconds before switch-off the 6GV8 might survive to take more punishment!

Now for the embarrassing bit! The circuit on page 37 is essentially the same transmitter, the only difference being in the details of the tank coil. The 0.002 uF capacitor is now in the right place. Admittedly the triode has one grid too many and the pentode one too few, but this is irrelevant. Also the G in 6GV8 looks more like a 4, but the text makes the type quite definite. The puzzle from our viewpoint, is how did both articles, almost identical as they were, find their way into the same issue? They should have been combined into one. If our faces aren't actually red, they are at least slightly pink!

Moving on to the April issue, page 25. Ron VK3RN and Allan VK3AE, both pointed out a number of difficulties with this tune-up indicator. Some of these are not very obvious to the beginner, so it is worth going through them in some detail;

a. The wire-wound pickup capacitor will have sufficient capacitance to detune the antenna, and also distort its radiation pattern.

b. Even at Novice power levels the RF voltage at the end of an antenna may be high enough to risk RF burn to the fingers if the feed wire or diode connections were touched. Meter burnout is also possible.

c. A diode so closely coupled to the transmitter (provided it survives burnout) could generate a whole spectrum of harmonics of the transmitter frequency, efficiently radiated by the pickup wire and the antenna itself. Result, TVI and signals on other bands where they have no right to be!

d. To overcome all these problems, use as the RFC a coil which will tune 80 metres (or band used) in conjunction with a small variable capacitor. Hard to get? Use a fixed capacitor and tune the coil with a slug. Then use the smallest possible pickup antenna, as far as possible from the main antenna. This also has the advantage of responding only to the wanted fundamental frequency of the transmitter output, whereas the original untuned arrangement could easily lead one to tune up on an unwanted (or even illegal!) harmonic.

Now we can get on to more normal Murphy-type problems, still with reference to the April issue. Typographical errors!Yea verily, Mr Murphy did play us for April fools. The article "A Discussion on Mixers" by Lloyd Butler VK5BR, abounded with them, mostly in those richest of Murphy's pastures, mathematical expressions and formulae. Thanks to Lloyd himself, here are the details:

Page 16 Para 5, line 3. "of f0" not "if f0".
Page 16 Para 5, line 6. "portion" not "position".
Page 16 Para 5, line 12. "of f1" not "if f1".

Page 18 First col, line 9. "f0 + f1" not "f0tf1".
Page 18 First col, line 11. "formed" not "normal".

Page 19 Second col, line 3. "exponential" not "experimental".
Page 19 Second col, line 9. The figures 2, 3 and 4 in the three right-hand denominators should read 2!, 3! and 4!

Page 21. The resultant waveform at the bottom of Figure 11 has been re-drawn incorrectly. The correct diagram is shown below.

The equation in column 1 should read:

$$A1\sin(2\pi f1t)\{1+4/\pi[\cos(2\pi f0t)]-4/3\pi[\cos(2\pi 3f0t)]\}\ldots\text{etc}$$
$$= A1\sin(2\pi f1t) + 4A1/\pi[\sin(2\pi f1t)\cos(2\pi f0t)]\ldots\text{etc}$$

Page 22 First line. "curved" not "current".

Page 24 Third col, para 2, lines 6 and 7. Delete the sentence "Specification of this point could be reached".

And in Lloyd's other article "Memory Expansion for the VZ200/VZ300 Computers", page 11, column 2, line 2. "B800H" not "8800H".

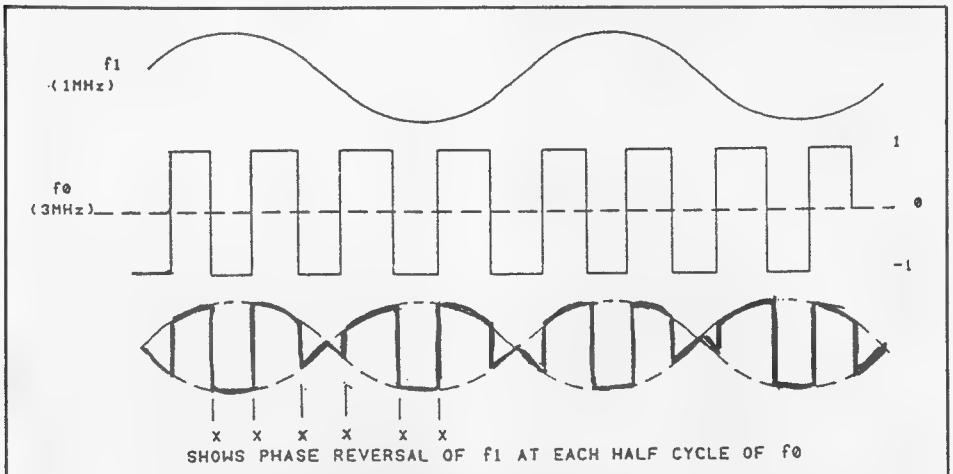


Figure 11: Double Balanced Diode Mixer Commutation of f1 by f0, f1 lower than f0.

Page 12. In the diagram, device N2 has four unnumbered pins. The three at lower left, reading from top to bottom, are 1, 3 and 4. The pin on the right is 13. Ignore the figures 4, 3, 2 and 1 shown well to the left of device N1.

Perhaps next month we will need only a normal-size "Murphy's Corner". I most certainly hope so, and I guess you do too.

AX3ABP

SITUATION VACANT

WANTED: Newshounds for the WIA journal, *Amateur Radio* magazine. The only requirement is a news-sense — an easily acquired skill. A definition of "news" is something that is new and of interest to someone else.

In the diverse hobby of amateur radio, things are happening all the time which could, if put down on paper, make interesting reading. Even just a news tip-off or an accurate snippet could lead to a worthwhile article.

Just spend a minute and give thought to whether you know of some news. Is your radio club or group doing something you think would be of interest to others — then submit an article.

If you see something printed about our hobby in a newspaper or elsewhere — take a clipping and put it in the post without delay. Remember to mark the clipping with the name of the newspaper or publication, and the date it appeared.

News offerings from amateur radio equipment suppliers and retailers about new products and industry developments are also most welcome.

Send your material to The Editor, AR Magazine, Wireless Institute of Australia, PO Box 300, Caulfield South, Vic. 3162.

COMPUTERESE NOT NEEDED

London scientists have launched a desk-top computer which accepts commands in English, doing away with the technical jargon of "computerese".

The computer produced by the London firm, Tome Associates, is claimed to be the first of its kind to incorporate "natural language programming".

A new computer program, called the Tome Searcher, is the outcome of five years work by computer and linguistic experts at London University.

ANTI—VIRAL COMPUTER PROGRAM

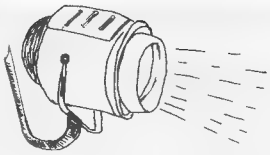
A company in New Jersey, USA, is offering to inoculate computers against viruses, or rogue programs designed to spread from computer to computer and damage data.

Viruses left unchecked can wipe out memory banks and disable computers — but this can be counteracted by the Viralarm system announced by Lasertrieve Incorporated.

Viralarm is a special program to protect another program, creating a software barrier.

Before anyone can use the protected program, Viralarm checks to determine whether the program has been altered since it was inoculated. If there has been any change, Viralarm then blocks use of the altered program, notifies the user and suggests a backup copy of the program be substituted.

Viralarm protection is available for individual personal computers and works for most of the operating systems now in use.



Spotlight on SWLing

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas. 7250

Half the year has almost gone already! Conditions do seem to be vastly improved from 12 months ago, especially on the higher frequencies. However, I do notice that as the Solar Flux climbs, the amount of geomagnetic disturbances also rises, which means that there are often more dropouts on circuits. These are particularly noticeable on polar and Auroral circuits, while equatorial and tropical areas are seemingly unaffected.

I have, of late, been frequently operating the 12 metre amateur allocation and have been pleasantly surprised by the results so far. I am using a humble G5RV multiband dipole about 10 metres high with my FT-707. I have fair reports on my 100 watts PEP, although CW is more reliable from stations in North America. I haven't worked any European or Asian stations from my West Launceston QTH yet on 24 MHz, although I can hear plenty of Asian CB signals on 26 and 27 MHz. It would be a good idea to monitor 24.950 MHz, which has become a calling channel and then QSY.

Results on 21 and 28 MHz from my G5RV have, so far, been disappointing and I am contemplating raising my 15 metre dipole up higher and altering its direction, in an effort to improve audibility, particularly to Europe and Asia. I used to have a Ringo vertical cut for 28 MHz at my previous QTH, and I might have to obtain a 28 MHz vertical in the future.

Signals from Central and South America are beginning to appear regularly on the tropical allocations of 60 and 49 metres. Radio Reloj in San Jose, Costa Rica is easily heard here from 0700 UTC on both its channel of 4.932 and 6.005.5 MHz. It frequently identifies and had typical Latin music. One South American station that comes in reliably is Radio Union in Lima on 6.115 MHz at around 0800 UTC. I believe they are running 15 kW. There are a number of Colombian and Venezuelan outlets on either side of the WWV 5 MHz signal. Frequently they carry networked programming which can lead to wrong identification. I was caught once by one identification as Radio Rumbos although it was not on the listed channel. It was only after I heard the same signal a few kilohertz down the band on the listed channel that I realised that Radio Rumbos is a Colombian network.

At a recent WARC meeting, it was agreed that international broadcasters would eventually use SSB for their programming. The year 2015 was mentioned as a date, but it will take perhaps a little longer. Not many broadcasters have employed SSB so far, yet a few have occasionally experimented with it. One has been Radio Sweden in Stockholm, which has utilised 100 kW senders at Varberg for a number of years. You can often hear them on 21.555 MHz USB with relays of the Swedish Home Service. Now the news has come through that this service is going to cease as from July 1. The Swedish Telecom has been providing it at their own expense and as part of their economic rationalisation, has decided to discontinue it.

However, the use of ISB (B8E) by international stations as feeders has increased. The USSR has, for many years, fed both its domestic networks on SSB and some international programming as well. For example, 6.058 MHz USB carries Radio Moscow Japanese language programming around 0900 UTC. Frequency 12.205 MHz carries Soviet domestic programming on each sideband around 1100 UTC. Other Soviet feeder channels are 13.380, 16.330, 9.905, 7.492.8 MHz, but they can often emerge anywhere on the fixed allocations.

There are also VOA ISB feeders readily heard. One of the easiest is perhaps 9.350 MHz, with one channel in Russian and the other with VOA English. The location of this sender is Delano, California. There is another VOA feeder on 14.398 MHz LSB from the same site with English, beamed to the Colombo, Sri Lanka relay. Although the VOA utilises satellite feeds for their audio, the use of HF feeders is a backup as well as synchronising with State-side transmitters. Another LSB feeder is 18.137.5 MHz, heard in our morning hours, as is 14.398 MHz.

The US Armed Forces Radio and Television Service feeder on 9.377 MHz LSB is actually located in England and is a relay from the satellite link to allow synchronisation with European AFRTS outlets. Both the BBC and Radio Australia used to have B8E feeders until a few years ago, but rely exclusively on satellite links today. Deutsche Welle and Deutschelandfunk also have an USB link on 6.955 MHz around 0530 UTC, to the Portuguese transmitters. The semi-clandestine Radio Liberty/Free Europe also extensively use B8E to link up with senders in both Spain and Portugal. Ironically, it is easier to hear the feeders than the senders within normal broadcasting allocations, because of the constant jamming that RFE/RL experiences. Tune around both 10 and 11 MHz and you will come across these feeders quite easily.

Incidentally, I came across Radio Moscow's DX program over their North American Service in English. It only lasts five minutes and contains "tips" on mainly Eastern European stations, although they did ask for listeners contributions. It is on at 0250 UTC Tuesdays and 9.530 MHz seems to be the best channel.

Well, that is all for June. Until next time, the very best of listening and 73.
—Robin VK7RH

Education Notes

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic. 3199

As one result of the devolvement of examinations, we may lose much of the information which we have been used to receiving from DOTC. This applies particularly to the statistics on numbers of candidates, papers used, and pass rates.

Although the Department officers are confident that the procedures for approving papers will maintain the standard of the qualifications, there is not yet an established procedure for collecting and collating information about the results of specific examinations either as a regular occurrence or on an occasional basis.

It seems to me that we should be collecting whatever information we can, so that the whole system can be reviewed after a reasonable time, and we can ensure both that candidates can have confidence in the system and that established amateurs are happy to accept graduates from the new system into their ranks.

The permission to conduct an examination must carry with it the obligation to submit the relevant statistics to the Department, even if there is not yet an established collation system.

Perhaps the Institute could undertake to do the collation and whatever statistical analyses become appropriate.

In response to questions raised at the recent Joint Meeting of the WIA and DOTC, the Department officers emphasised their intention to consider the papers as a whole as well as the individual questions and distribution, to ensure comparability between examiners. Papers composed of all "easy" questions and all "hard" questions may be returned for modification before being approved.

There will also be a need for supply of information about times and locations of intended examinations. At present, the requirement is for this information to be submitted with the papers for approval. Local DOTC offices will then disperse the information on request.

We would like to have this system expanded so that the information also comes to the Institute. Both Divisional Offices and the Executive Office should be able to answer inquiries about future examinations. If inquirers can only be told to contact the local DOTC office, we lose a valuable chance to show intending amateurs what the Institute has to assist them.

I would appeal to all who are intending to run examinations to provide this information to the WIA as a matter of course.

The long awaited revised version of the regulations is about to appear. Please study them, and be aware that they will be the basis for the future regulations examinations.

The finished publications will be as a **free** leaflet.
73, Brenda VK3KT

SIX-METRE PROPAGATION TEST

Six-metre propagation tests will be conducted in Singapore from June 3 to June 12, 1988. Co-ordinator for the event will be Yoshi JA1UT.
Frequencies — 50.075 and 50.125 MHz.
Location — Century Park Sheraton Hotel, Nassim Road, Singapore.
Call sign — 9V1ES.
—Contributed by K C Selvadurai 9V1UV, President, Singapore Amateur Radio Transmitting Society

Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

1988! VK BICENTENNIAL AND YEAR OF THE YL

Here in Australia we are celebrating our Bicentenary in various ways throughout the country.

Who could fail to be moved by the stately fleet of tall ships gliding into Sydney Harbour on Australia Day, the pageantry and colour which has marked so many of our special celebrations in honour of our 200th birthday.

In the amateur radio world, the event has been marked by use of the AX prefix, and the special VI88 call signs for each State are eagerly sought after, particularly by DX prefix hunters.

Many amateur radio clubs have special events and activities planned for 1988.

ALARA members are commemorating the occasion with the Mavis Stafford Bicentennial Trophy (details March AR), which is creating much interest, and the attractive ALARA Award stickers, designed and coloured by Valda VK3DVT.

1988 could also be termed "YL Year" with several YL awards running concurrently, some fairly easy to attain, others more difficult. Among them are:

The Mavis Stafford Bicentennial Trophy
The WARO Century Award (AR, October 1987)
The Dutch YL Year 1988 Award (AR, December 1987)
The Japanese JLRS YL-88 Certificate (Details below)
The Brazilian YL PY 88 Award (Details below)

With the exception of the WARO Century Award, these are all special awards for the year 1988, and should ensure plenty of YL activity on all bands.

Personally, I am getting a great deal of enjoyment working contacts for the various awards, meeting new friends, and catching up with old ones. My main problem is keeping track of my lists for each award, but a general rule seems to be to work YLs whenever possible, and catch up with the paperwork later.

MAVIS STAFFORD BICENTENNIAL TROPHY

To go with the Bicentennial Trophy, we now have a consolation prize. Margaret VK4AOE, has kindly offered a crochet table centre as a consolation prize to accompany the Mavis Stafford Bicentennial Trophy. It will be for the YL who scores the middle position in the points ladder of the YLs who apply for the award. In the event of a tie, the lower score gains the VK4AOE Consolation Prize.

JLRS YL-88 CERTIFICATE

The YL-88 Certificate will be issued for confirmed contacts with 88 YLs between March 3 and August 8, 1988. Contacts must include at least two JLRS members (including DX members)

Contacts with the same YL on different bands or modes will not count as additional QSOs.

Logs must show full date of contact, time, call sign, frequency and mode, full name, address, call sign and signature of applicant. Logs accompanied by three IRCs for postage of the certificate and souvenir to:
Nobuko Wakabayashi JG1QGQ, 5-21-7 Meguro-Honcho, Meguro-ku, Tokyo, 152, Japan, to be postmarked no later than August 31, 1988.

YL PY 88 AWARD

From Labre DS/SP for all contacts in any band and mode for 88 points during the period January 1, 1988 to December 31, 1988 with Brazilian YLs.
Phone Contacts each PY YL — eight points
CW Contacts each PY YL — 11 points
Special Stamp for CW Award, and SWLs can also apply.
PY YL DX Net — from 1900 to 2100 UTC on 14.248 MHz will help. Other times can be arranged.

ALARA AWARD UPDATE

No	Date 1988	Name/Call Sign	Endorse	Endorse Stick	Bicenten Stick
92	Feb 25	Kim Wilson VK3CYL		3	1
100	Feb 25	Kim Wilson VK3CYL	All 2xCW	2	1
119	Mar 3	Alan Hughes ZL3KR		1	1
135	Mar 4	Aimee Tuband FK8FA	All 14 MHz 2xCW		1
136	Mar 4	Dawn Young ZL2AGX		2	1
137	Mar 10	Mary Lou Brown ZK2MB		1	1
138	Mar 10	Jan Scheuerman ZK2JS		1	1

The Awards Custodian, Mavis VK3KS, hopes to issue many Bicentennial Stickers this year, and keep Valda busy colouring them.

YL ACTIVITY DAY

During the past few months, there has been renewed interest in YL Activity Day, held on the sixth of each month. With improved band conditions it could be revitalised as a means of getting together for a rag chew with our DX and VK friends, something more than just an exchange of call signs and reports. There is the added advantage this year of gaining contacts for one of the various YL Awards.

Here is what Diana G4EZI has to say about it:

The idea was born after participating in the YL Anniversary Party in October 1989. I thought it seemed a pity that many YLs only ever came on for YL contests, where there was never really time to chat and get to know any of them. I thought that if we had one day a month when YLs could get together, and be sure of finding other YLs on the bands, it might encourage more of them to get on the air without the pressure of a contest and the QRM.

I discussed the idea with Peggy WB2OHD, and she agreed to spread the word among American YLs. I then circulated the information to all the YL clubs and individual YLs I could think of.

I chose the 6th of the month because Renee F5RC, had already tried to start a YL Activity Day on that date, but it had never really got off the ground (probably because frequencies and times for looking for other YLs had never been specified). I realised we must specify times and frequencies to look for other YLs, as no one can scan the bands all the time, so I thought it was sensible to listen on the hour each hour. The frequency, 14.288 MHz, was selected because

Carol VK5PWA.

Sue VK5AYL.

Gill Wardrop.

this is where the American YL Open House Net already met. 21.188, 21.388, 25.588 and 28.688 MHz were chosen to fit in with this — we had to give two frequencies for 15 metres and 10 metres to fit in with operating restrictions in certain countries. CW frequencies were added later, and had nothing to do with me as I don't touch the key — these all end in 33.

The first YL Activity Day was November 6, 1979, and I worked eight YLs on that day — two VKs, four Americans and two G stations. On December 6, I worked 12 stations from six countries, but I believe quite a few more may have been active. January 6 shows an incredible 30 stations in my log. Only nine YLs were worked on February 6, 20 March, 18 April and 19 in May. Things started going downhill in 1981 — March 12 YLs, April 12, May 9, June 3, July: no YLs worked except on the BYLARA net, August 4, September 1, October not takers, November 0, December 1 YL. January and February 1982 0, but things improved again in March with seven contacts (but no Europeans heard!), 4 in April and 5 in May.

The heyday of YL Activity Day was probably about two or three months after it started, which is about the time the information first appeared in all the YL magazines. Since then, it has gone up and down a bit, staggered along, and I'm afraid I probably didn't bother supporting it as much as I had been doing.

However, I believe the VK YLs still support it — the information always appears in their magazine, and when I used to write regularly to Jos ZL2BAO, about two years ago she still always went on and seemed to find plenty of VK and ZL YLs around the bands on the sixth.

—From BYLARA Newsletter, December 1987

SILENT KEY

Our sympathy to OM Stan, family and friends of Bobbie VK6MH, who became a Silent Key on March 25. Bobbie was an amateur radio operator for 50 years (April AR).

BITS AND PIECES

Several ALARA members have been involved with VI88 call signs including Bev VI88WA, Gwen VI88VIC and Maria VI88SA.

Bev VK6DE, OM Brian VK6AI and son Colin, had a most enjoyable trip to New Zealand and met many of the ZL friends they talk to regularly. Peggy VK6NKU, was also in New Zealand, and it is interesting to note that, although she and Bev live within 200 kilometres of each other, and have had many QSOs, they had never met until they both went to Auckland.

The VK3 Birthday Luncheon will be held on July 31.

Congratulation to Norma VK2DJO on the arrival of a second daughter, Michelle, also, to proud grandmothers, Bobbie VK2PXS and Rae VK3AYL.

Grandchildren seem to be the "in-thing"! Heather VK2HD, has another grandson, and OM Dan and myself another granddaughter, born in February. Ken VK3AH, ex-DX Editor in AR, has two new grandson's born four weeks apart.

Until next time — 73/33 and 88.

Joy VK2EBX

QSP

GREEK SPECIAL EVENT CALL SIGN

The Radio Amateur Association of Greece (RAAG) is celebrating its 30th anniversary.

To mark the occasion, the special call sign SX1RAAG has been issued to the national radio society.

The station will be active on CW and SSB from 160 metres to 10 metres, until June 30.

Book Review

1988 ARRL HANDBOOK FOR THE RADIO AMATEUR

Jim Linton VK3PC
4 Ansett Crescent, Forest Hill, Vic. 3131

The 1988 ARRL Handbook for the Radio Amateur marks the 65th edition of this most highly respected publication.

The handbook is not only a basic resource for all radio amateurs, but is widely used by technicians and engineers.

This new edition only comes in hard-cover and should last for many years. The previous editions were difficult to handle because they acted like a floppy telephone directory.

The 1988 handbook is, as usual, well indexed, making it ideal as a text book for those studying for DOTC theory examinations or for the experimenter wanting to check on a theory aspect.

New construction projects range from a passive CW audio filter to a synthesised computer controlled receiving converter.

Other projects added to the new edition include a deluxe memory keyer, balanced QRP transmatch, and a 160 metre transverter.

The first five chapters cover the basics of amateur radio, electrical fundamentals, radio design technique and language, and solid state principles.

Vacuum tube principals in relation to high power amplifier design are also presented in the introductory chapters.

There are 12 chapters devoted primarily to radio principles, power supplies, audio and video, digital basics, modulation and demodulation, transmitters, receivers, transceivers, repeaters, power amplifiers, transmission lines and antenna fundamentals.

Another four chapters cover voice, digital, image and special modulation techniques.

The RF spectrum, propagation and space communications are covered in two chapters.

The construction and maintenance sections have 12 chapters of useful projects ranging from power supplies and antennas through to digital equipment.

The final five chapters cover how to obtain a licence in the United States (curiosity value only), station design and operation, interference, monitoring and direction finding.

As usual, the ARRL Handbook is easy to read and well illustrated. It is now available from your Divisional Bookshop.

Radio Amateur Old Timers Club

Kevin Duff VK3CV
PUBLICITY OFFICER
RAOTC
10 Stanley Grove, Canterbury, Vic. 3126

The 20 metre QSO Party, held on March 14, was, as is usually the case, very much subject to skip — if your QTH was not in the right place, you were lucky to work anyone, but Warrnambool always seems to be just perfect! Jack Anderson VK3JA, worked 30 of the 22 VKs and 12 ZLs who seemed to be active and were noted in the logs submitted.

We hope for a better turn-out in the 80 and 40 metre parties on August 8 and 15. See *OTN* March 1988 for details.

RESULTS

CALL	MODE	QSOs	MULT	SCORE
VK3JA	CW/SSB	30	9	1350
VK2AWA	CW/SSB	15	7	525
VK3VF	SSB	13	7	455
VK3XF	CW/SSB	11	7	385
VK7JB	SSB	9	7	315
VK4ALW	CW	10	6	300
VK3YW	CW	8	6	240
VK2BJH	CW	8	5	200
VK3AMD	CW/SSB	9	4	180
VK3XH	SSB	7	4	140
ZL3BJ				960
ZL2AT				920
ZL4AI				480
ZL2AB				330
ZL3AY				200
ZL1VX				140
ZL2AW				60

ar

DIRECT READING CAPACITY METER

AR, October, page 18

There were two errors in the article, October page 18.

1. The meter should be 500 uA, not 500 mA.
2. SW1 is shown as being normally open — it should be normally closed.

The latest figures on the aging rate of the 10 MHz crystal used in the Frequency Reference, described in AR, September/October 1986 are as follows:

Total continuous running time — greater than two years.

Last major correction and date — January 20, 1987 (≃ 5 Hz).

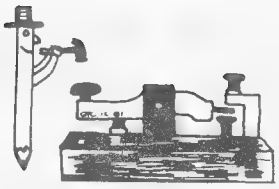
Last reading date — October 22, 1987.

Total days — 275 days.

△ frequency — -6.5 Hz.

∴ aging rate per day — .0024 PPM.

—Contributed by Ken Kimberley VK2PY



Pounding Brass

Gilbert Griffith VK3CQ
7 Church Street, Bright. Vic. 3741

What we call CW is the most basic form of radio communication. The test books tell us that it is really Interrupted Carrier Wave (ICW). We can split hairs and call it just about anything, after all we are not interrupting a carrier but sending bits of carrier. Morse Code. Another method is called Frequency Shift Keying (FSK) where the dot or mark and the space are on different frequencies. I may or may not deal with the subject at a later date, but for now I hope to deal with ICW or simply keying.

The bandwidth required by a properly keyed signal is quite small, and directly related to the speed of sending. A simple on/off switch will generate a square envelope, together with its harmonics or clicks. You may hear these clicks while tuning in the CW section of the bands and be able to pinpoint the station involved. On the other hand, a "soft" dot may be hard to copy, especially at high speed.

There are two main components which affect Keying Characteristics. Envelope shape, and frequency stability. Any trouble such as key clicks, ripple, chirp, whoop and spacer waves can be attributed to poor conditions in one of these areas.

The envelope shape is the outline of the pattern that the signal would display on an oscilloscope. You can imagine that getting the shape right is a difficult thing to do properly, let alone getting it right for a number of different speeds.

An unduly "hard" signal will cause key clicks, which are actually unwanted sidebands, taking up more spectrum space.

Chirp is a form of frequency instability which occurs each time the transmitter is keyed, and is recognised by a change in beat frequency at the beginning and end of each character when the signal is monitored on a receiver. About the only place you will hear it nowadays is on home-brew equipment controlled by a VFO (mine!), and there are three main causes:

1. **DC Instability** — which occurs when a common power supply is used for the oscillator and the power amplifier. Even the best designed oscillator will require a regulated power supply, and sometimes a separate power supply, to have the stability needed for today's standards.
2. **Pulling** — refers to the effect on the oscillator frequency of one or more of the subsequent stages whose operating conditions change during the keying cycle. If the stage following the oscillator draws input current or the early stages are tightly coupled, pulling can be expected. If the oscillator is on the same frequency as the PA the likelihood is increased. Be careful design it should be possible to short the output of the oscillator chain without shifting the frequency by more than a few Hertz. However, this sort of dedication is not necessary in a receiver alone.
3. **RF Feedback** — any high level stray signals leaking back to the oscillator will have an appreciable effect on its frequency, especially if it is a VFO. Isolation of the oscillator is of paramount importance. External feedback is only discovered after the transmitter has been built, and the commonest cause is the PA circuitry being close to the oscillator section. A metal screen is recommended as well as bypassing the HT line to RF by means of series resistance and shunt capacitance.

In case you are wondering where I am reading up on all this information, let me assure you that I am having **all** the above problems with my QRP equipment, so a certain amount of "reading up" is mandatory. I am merely attempting to pass the information along.

All the problems are compounded when attempting a full break-in system (QSK). Not only must the transmitted signal be clean, but the receiver must be muted or attenuated in strict timing with the transmitted signal. Slow AGC circuits, such as are fitted to most commercial transceivers, are characterised by their long recovery time, so the receiver will not be able to recover its sensitivity in the spaces between the signal elements. Even the design of the audio section must be carefully considered to prevent the thumps associated with its switching on and off at Morse speeds.

The feature of a full break-in system is that the operator is able to hear incoming signals in *between* his own dots and dashes. When using QSK, the normal changeover and keying functions are controlled by the key, and they must take place in the right sequence. The station must return to the receiving condition at the sensitivity level required by the operator between each dot and dash of the transmitted message.

It is not easy to install a good break-in system, one of the problems being that of keying the transmitter oscillator stage. This can be avoided by leaving the oscillator running and screening it so well that it cannot be heard in the station receiver, or using a mixer type VFO with a keyed mixer. It is *very* difficult to screen the VFO from the station receiver.

If the transmitter oscillator runs continuously it may be audible as a *backwave* or *spacer wave* between the keying pulses. A strong backwave may indicate the need for neutralising one or more transmitter stages.

RF envelope shaping can be controlled in different parts of the transmitter by many different keying methods. Because on/off keying is a form of amplitude modulation (AM), it generates sidebands whose spacing from the carrier is a function of the keying envelope rise and fall times, which are the highest frequency components of the keying waveform. An untreated keyed waveform looks like square wave modulation, so it consists of the carrier plus all its odd harmonics. The resultant key clicks will extend many kilohertz either side of the carrier. On the other hand, an envelope with a long rise and fall time will sound soft because there is less contrast between the noise and the signal for the ear to respond well at high speeds.

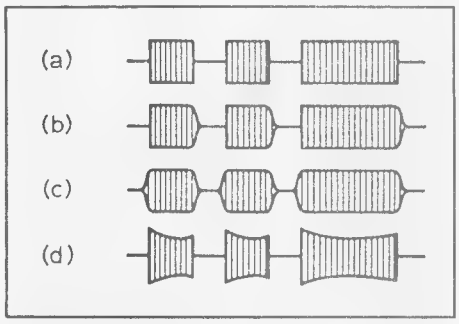


Figure 1: Keying envelope characteristics. (a) Click at make and break; (b) click at make, with click at break suppressed; (c) ideal envelope with no key clicks; (d) effect on keying envelope of poor power supply regulation.

Examining the graph will give an idea of the many adjustments necessary for a proper signal at the appropriate speed. Figure 1 shows the ideal envelope shape (as recommended by the FCC) suitable for speeds up to about 60 words per minute (WPM). Figure 2 show some other keying envelope characteristics.

Weighting provides a method of adjusting the overall shape of a string of Morse elements. It can be used to adjust individual element shapes but this is best done in the actual keying circuits of the transmitter. Slow Morse (five to 15 WPM), can benefit from a *heavier* weight, ie the length of the dots and dashes is increased with respect to the spaces between them. This, according to many operators, gives the signal more *punch.* At higher speeds (25 to ?? WPM), a light weight will give the dots more emphasis, but the conditions must be relatively good for *any* copying at high speeds. It requires a well based knowledge of keying envelopes just to know which knobs to twiddle if you have the latest in weight controlling keyers! Other-

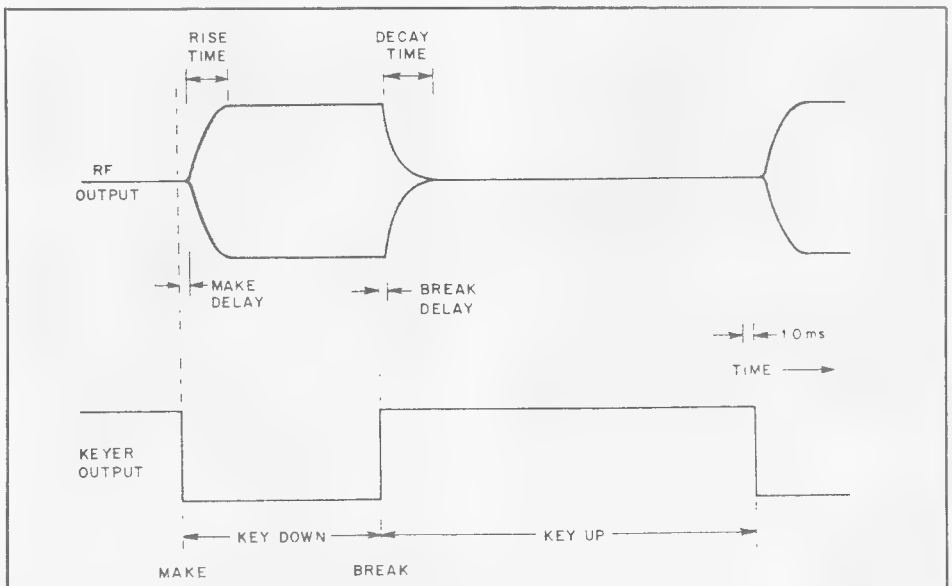


Figure 2: Shaping and timing in CW keying systems.

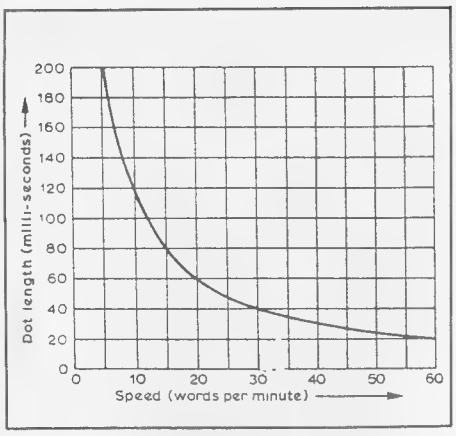


Figure 3: Graph showing dot lengths for a range of transmission speeds. Once the design figure of the maximum speed of sending for a transmitter has been decided, this graph can be used to select the appropriate time delays in keying filter circuits.

wise, you can certainly conclude with some interesting effects.

There are many possible methods of keying, and the choice is largely one of practical convenience, personal preference, and suitability to the station as a whole. Almost any stage of the transmitter may be keyed. If the oscillator is keyed, the requirements of a short time constant to reduce chirp and a long time constant to eliminate click conflict.

If any stage before the PA is keyed with softening, the PA may harden the keying causing clicks. So, keying the PA seems to be preferable. In some cases it is useful to key more than one stage sequentially, and I hope to cover this later on.

REFERENCES
RSGB Radio Communications Handbook, Fifth Edition
The ARRL Handbook, 1986 Edition

The CW Operators QRP Club is, as far as I am aware, the only CW dedicated club in Australia. If you are a Knight of the Key, you should make some inquiries about membership. If you are willing to take the plunge, I thin you will be pleasantly surprised at the fellowship and camaraderie, not to mention the benefits for the small annual fee involved. I believe it is the duty of all dedicated Morsiacs to support their mode against the negative thinking currently in vogue. I do not want to sound pushy, but I am the one writing this column so I feel justified in that regard. Supporting your hobby means more than just firing up the rig once a week. It has probably cost you a fair amount of hard cash already, so why not protect your investment. Get involved in the contests and support the Morse section, send in a log, no matter if you only have time for a few contacts, it will only cost you a stamp. This especially applies to the Novice Contest, *they* need your support too. If you have the time, try your hand at home-brewing, the rewards far outweigh the headaches, and you will keep the parts suppliers in business for the next generation.

If I can help with information, I will be glad to do so. Think of me as a clearing house — I will do my best!

73 for this month,
Gil VK3CQ

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DEADLINE FOR AUGUST IS JUNE 20, 1988

How's DX?

THAILAND GETS AMATEUR RADIO

The hobby of amateur radio has never been legally recognised in Thailand, but a new law has changed that situation.

Thailand has been virtually off the HF bands since 1982, and in the past five years great efforts were needed to convince authorities that private citizens should have radio transceivers.

Under new radio regulations, Thai nationals aged at least 15 years will be eligible for licences.

There will be three licence grades, namely:

☆ Novice Class, offering VHF only on two metres;
☆ Secondary (Intermediate) class, with a Morse code requirement and a better technical knowledge than the Novice, and;
☆ First Class, with Morse code capability and even greater technical knowledge.

A national Security Council or Police clearance is required before an amateur radio licence is issued. Licence applicants need to be a member of the Radio Amateur Society of Thailand (RAST).

The Thai Post and Telegraph Department is keen on reciprocal licensing. This will be the only way non-Thai nationals will be able to operate in Thailand.

RAST International Liaison Officer, Tony Waltham HS1AMB/G4UAV, told *Amateur Radio* magazine that the RAST is officially recognised under the new regulations, and has the role of overseeing amateur radio operations, especially on the HF bands, when this returns.

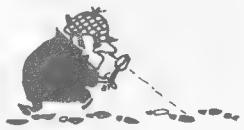
Tony says at present there is no licenced HF operation. The relative lack of HF activity since 1982 has been due primarily to steps being taken by the authorities to fully legalise amateur radio. Over about 20 years it had been self "policed" by the RAST.

Tony explained that the RAST, at the end of 1982, advised its members to go QRT on HF while the Post and Telegraph and security agencies reviewed the question of amateur radio. But in order to maintain Thailand's presence on the HF bands, RAST members obtained special permission to take part in major international contests — sustained operation to maximise QSOs.

He says in the past five years it has been "a tough task explaining to the national security authorities why private citizens should have radio transceivers." That hurdle has now been overcome with operations expected soon. However, under the regulations, operations will, at first, be only from club stations.

The RAST has elected a new committee to see the smooth return of the hobby. The RAST President is also the Permanent Secretary to the Communications Ministry, and long-term amateur radio enthusiast, Sribhami Sukhanetr HS1SS.

A significant event for amateur radio in Thailand is that they will host the SEANET Convention this year from November 11 to 13. Due to no HF operations, it has been difficult for RAST to publicise this event but hopefully, nearer to the date, information will be available on SEANET, which meets on 14.320 MHz every day at 1200 UTC.



Intruder Watch

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

On opening this month's column, I refer to my final comments in the February 1988, summary of intrusions reported, and I quote myself;

"28.000 MHz and up — hundreds of Asian voices working all the lower segment of 10 metre band . . . now daily occurrence . . ." unquote.

This problem, now reported daily, has escalated to a height somewhere near where I predicted some months ago. And 10 metres is not really feeling the effects of the new solar cycle yet. This problem will **not** go away. The *Intruder Watch* needs to hear from concerned amateurs on this matter. If you are hearing the Asian stations on 28 MHz, then please send in a report to the *Intruder Watch*.

Reports for February 1988, were supplied by VK2s DEJ, EYI; VK3s AMD, XB; VK4s AEM, AKX, BG, BHJ, BTW, BXC, DA, KHZ, OD; VK5s GZ, TL; VK6s RO, UA; VK7RH; VK8s HA and JF. Thank you gentlemen, for your efforts.

I have received an intruder report from the Faroe Islands recently — OY7ML . . . *Amateur Radio* magazine certainly gets around!

I am still looking for reports on an AM station being heard on 14.025 MHz, and originating in Guam. KTWR is the call sign, and it seems to be producing spurii from 11.805 and 9.585 MHz. *Please drop me a line if you hear this one.*

Vietnam and the USSR continue to transgress, and make up the bulk of our complaints re intruders.

Now to notify a vacancy in the ranks:

For several reasons I have sent notice of resignation as the Federal Intruder Watch Co-ordinator to the WIA Federal Office in Melbourne. I have held this position since July 28, 1982 and I have made many friends and acquaintances in the hobby during that time. I hope to continue to make many more.

Many reasons prompt this decision, and, to paraphrase Winston Churchill, "Into them I will not go." However, I am vacating the position on the appointment of a successor, or until the end of 1988, whichever is the sooner. If you feel that you want to help in the preservation of our bands from intrusions, or you know someone who does, please let me know. I stand by to give all the help I can, and can be reached at the address at the top of the column.

Don't mumble to yourself when your QSO is interfered with by an intruder . . . **tell the Intruder Watch about it.**

Have a good month, and see you in July. 73 for now.

ar

Electro-Magnetic Compatibility Report

Hans Ruckert VK2AOU
EMC REPORTER
25 Berrille Road, Beverly Hills, NSW. 2209

This report shows how competent radio amateurs helped the Department of Communications in West Germany to establish radiation susceptibility standards for video recorders. This should educate the public and prevent the purchase of VCRs which are not compatible with the operation of licensed transmitters in the neighbourhood.

RADIATION IMMUNITY OF VCRs, VCI

by Guenter Schwarzbeck DL1BU, 6917 Schoenau-Altneudorf

Translated by VK2AOU from cq-DL *magazine, April 1987*

SUMMARY: The advent of Video Tape Recorders a few years ago in domestic areas has caused much trouble due to excessive susceptibility to strong electro-magnetic fields.

In this type of equipment, microvolt radio frequency voltages are amplified between 0.5 and five to 10 MHz. This is responsible for the highly unwanted sensitivity to conducted and radiated RF power.

In West Germany, limits of field strength and conducted RF transfer have been set. Knowledge of these facts and early warnings has improved shielding and filtering of Video Recorders during the past two years.

New limits for the radiation immunity of VCRs have come into force with this publication of *cq-DL* magazine. The VDE (Association of German Electrical Engineers) regulation DIN/VDE 0872, Part 4 aims finally at an immunity, in the critical case of reproduction, of 3.16 volts per metre (field strength 130 dB (uV/m), and unwanted signal unloaded voltage level 140 dB (uV) under section 3.3 for the radiation immunity.

This final aim is already being achieved by some especially well-designed VCRs. Until March 31, 1987, the above mentioned unwanted signal unloaded voltage was allowed to reach a level of 125 dB (uV). Within the frequency range, for us of special interest, 4.25 MHz to 6.25 MHz, 120 dB (uV) was set. These values were increased by 5 dB as from April 1, 1987, that means 130 dB (uV) within the amateur bands.

This relative success required hard discussions backed by much practically measured data during the meetings of the Committee 761.5 of the German Electrotechnical Commission. In attendance during the critical phase was the representative of the DARC, Doctor Gerhard Blechert DL9TJ, and during the determination of the limit values DL1BU (Honorary Technical Officer of the DARC). It required 30 meetings to deal with all aspects of the complex subject; whilst the limit values, which determine finally the radiation immunity, were mainly completed at three meetings.

The German Electrotechnical Commission referred in a letter to the complaint of the DARC (letter December 18, 1985). In the meantime they worked out standards, which consider our proposals, and expressed their appreciation of the DARC co-operation.

Another complaint had been lodged by a technical college, DL9AH/DL6BQ. This led to the adoption of the sentence in the explanations at the end of VDE-0872 Part 4. "The limit values listed in this Standard are minimal values, and they represent commercially acceptable application of the present technical standards. Locally, special cases may make it necessary to use additional means to improve further the radiation immunity."

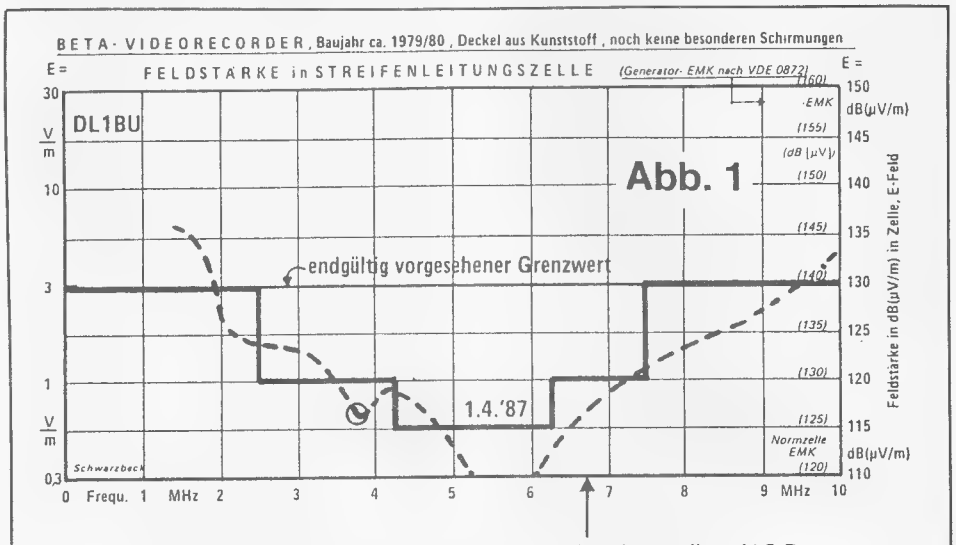
The meetings were attended by experts of the VCR manufacturers, DL9TJ and, at times, DL1BU for the DARC, experts of the FTZ (DOTC), the Consumer Association (product testing), Association of Consumers, RBT-Neirnberg, Association of the Electrotechnical Industry (ZVEI) and the VDE Testing Office.

The often heated debates are most likely forgotten today. The manufacturers also gain from a far-reaching peaceful development and a greatly reduced number of complaints by customers with radiation problem cases.

All transmitter operators, not only the radio amateurs, will be confronted by similar problems in future. The sale of mass-produced electronic entertainment cannot simply be stopped by referring to possible EMC collisions. We, ourselves suffer and gain from this turbulent development. It takes some time before performance standards and limits for these products can be established. The FTZ (DOC) is, in spite of this problem, continuously active with the VDE, the "Market Leader" in establishing standards, which such apparatus has to meet to avoid EMC problems. Many foreign administrations adopt these limit values and standards catalogue, but not always with the same stringent field strength values.

The Video Recorder problems were first mentioned in detail in *cq-DL* November 1984. The measuring method with the Test-Cell (Jacky) was shown in Figure 2 page 542. This publication was almost identical with the text in English and the drawings (by DL1BU) which DK2NH lectured about at the Symposium on EMC at Wraclaw (Poland) in 1984. The Council of the DARC has been fighting for years and still continues the administrative battle with the German Post Office and the FTZ, to obtain fair rules and laws for dealing with cases of unwanted radiation (insufficient immunity). The

Figure 1: BETA Video Recorder, of the year 1979/80, plastic lid, no shielding. Field strength within the test-cell. Solid line as per standard April 1, 1987. Radiation immunity is below standard April 1, 1987.



Die EINSTRAHLUNGS-STÖRFESTIGKEIT des oben dargestellten V.C.R. liegt von 3,4 MHz bis 7,3 MHz fast durchweg unterhalb des ab 1.4.1987 gültigen Grenzwertes. Die Einstrahlstörfestigkeitskurve unten liegt stets oberhalb.

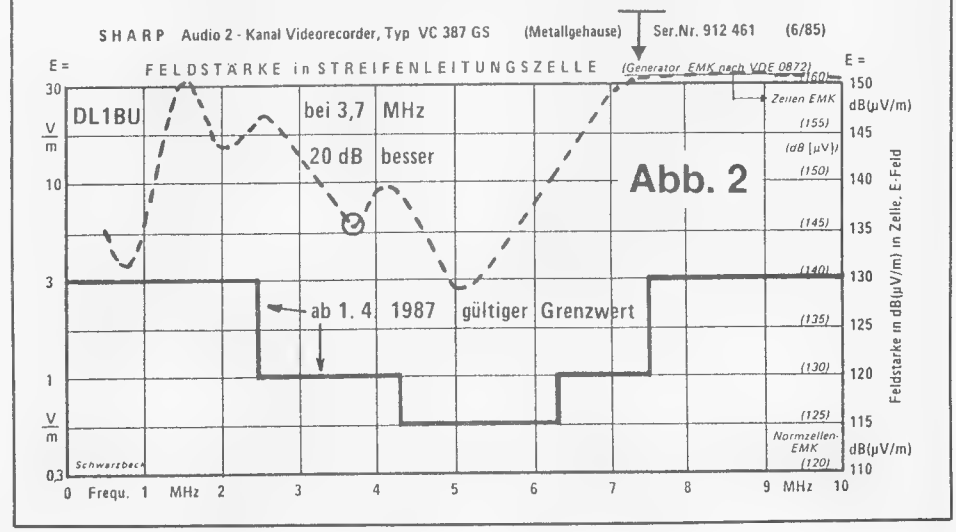


Figure 2: Sharp VCR Type VC 387 GS. Radiation immunity is better than required (by up to 20 dB). Metal case, Date 6/1985.

Figure 3: VCR Type VT-14E (Oberlander) Serial Number 30511297, Date 6/85. Very low immunity.

following measurements are in line with those by the FTZ. Warnings were issued some years ago before VCR performance standards had been issued, because large variations in immunity properties had been observed. The differences amounted to over 20 dB, that is a 1:100 power ratio. This situation shows that one could not speak of "VCRs being representative of the state of the technology" without detailed testing. Two years ago both Grundig and Sharp VCRs surpassed even the finally required immunity standard of 3V/m, eg 140 dB (uV) unloaded level as per DIN-0872 over the range of 1 to 10 MHz. On the other hand there have been VCRs with immunity 10 dB below the limit due to production tolerances. There is also still the question of what stage is a picture acceptably free of interference? The start of picture interference is, for example, clearly lower with a colour bar than with a test picture. The testing conditions have now been established with VDE-Norm 0872 Part 5 (January 1987). The radiation immunity tests of VCRs in 1981 were carried out with standard test pictures and originally with a SW workshop monitor. Changing over to colour bar tests showed particularly high sensitivity of VCRs to medium frequency not visible in black and white reception. Complaints were received by the manufacturers from customers who lived near high power medium-wave transmitters, indicating that screening and filtering is very important. Far East manufacturers learned from their European partners about the problem. Also, the pressure from the above mentioned expert groups and the FTZ, and also from the radio amateurs, was quickly conveyed to Japan. Substantial improvements have been observed during the last two years and more are expected.

THE PRACTICAL MEASURING RESULTS

Figures 1 and 2 represent two Japanese VCRs, which were imported at different times. Figure 1 is for an old VCR (construction year 1979/80) with a plastic lid and top loading. We are especially interested in the immunity value on the 80 metre band. As the graph shows (dotted line), interference at 3.7 MHz occurs for 0.6 V/m. The Sharp 387GS VCR from year 1985 can take 10 times this field strength at 3.7 MHz, before VCI is observed. This VCR withstands 6V/m, twice the finally specified standard level at 1.7 MHz, and can even suppress 30 V/m at 7 MHz.

The graphs showing the radiation immunity were obtained as described in *cq-DL* November 1984. The equipment under test stands in a wide Lecher line (test-cell, Jacky). This is a very much enlarged Lecher line, related to the twin wire feeder line. The line is correctly terminated at the end (low SWR) and is fed with a power signal generator (Figure 2, *cq-DL,* November 1984). The amplitude modulation technique has been determined since 1984. The unmodulated generator signal is measured and plotted on a graph. Only then is 1 kHz at 80 percent modulation added. The generator voltage is increased until the first effect is visible on the colour bars or the sound. The field strength is calculated from the applied RF voltage and the width of the test-cell opening. Correction factors have to be considered, depending on the height of the equipment under test. The test-cell used here was 40 centimetres high, therefore well-suited to VCRs. The standard cell according to VDE-0872 is 80 centimetres high. It is connected to the signal generator via a matching network. Graphs show usually the unloaded voltage of this set-up. The figure expressing voltage in dB is 10 dB larger than the figure of the electrical field strength stated in dB (uV/m). I had objected that the RFI-measuring service measures field strength and therefore the field strength in the test-cell should be specified. This was rejected, because the method had already been finalised years ago for the testing of radio and television receivers. One can live with this 10 dB difference, which is easily calculated.

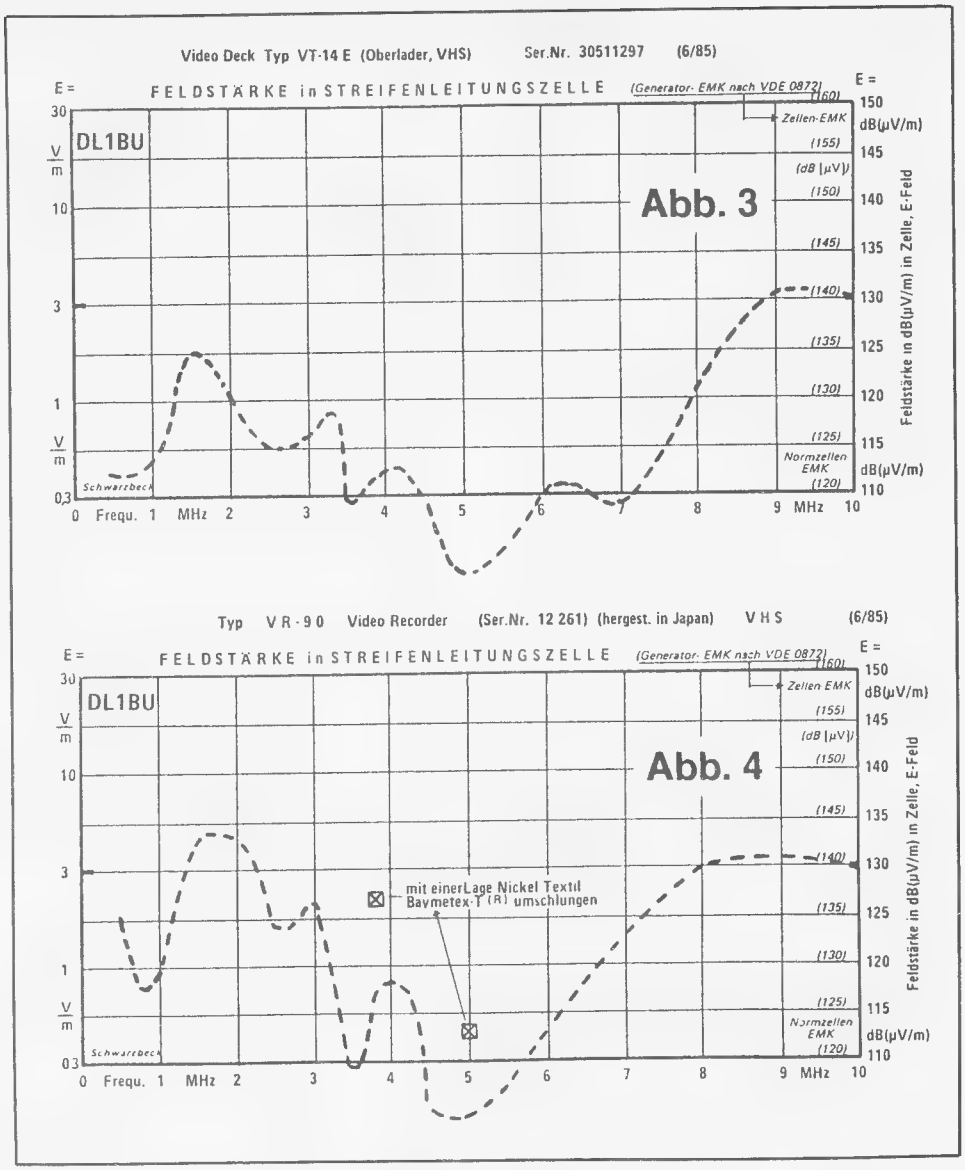


Figure 4: VCR Type VR-90 Serial Number 12 261, made in Japan, VHS, Date 6/85. Very low immunity, immunity is improved by wrapping shielding cloth around the VCR.

Figures 3 and 4 show the radiation susceptibility graphs of two Japanese VCRs, which had been developed in 1984. The industry then had already been warned that planned susceptibility limits by the German Post Office had been issued, but they were not enforced at that time. These VCRs show RFI already at 0.3 V/m on 3.7 MHz. The best VCRs constructed in 1985/86 showed an immunity of 6 V/m, which is an improvement of 26 dB. This is a power ration of 1:400. A practical example demonstrates the tragedy facing all involved. It does not matter whether a medium wave or shortwave radio transmitter (unlikely to reduce power) is responsible, an official shortwave station or a radio amateur transmitting the legal field strength. Whilst in the same position the VCR with 6 V/m immunity is not affected by 400 watts transmitter power, the VCR with only 0.3 V/m capability is already affected by a one watt signal. The radio amateur, who would be forced to close down his transmitter, when he lives near such a bad VCR, is likely to lose his faith in justice, because it is quite impossible to have communication these days with one watt on the 80 metre band. The operator cannot move to higher frequency bands during years of low sun activity because of the low MUF.

Figure 5 shows another very bad case, unless the manufacturer is prepared to save his good name and incorporate the necessary shielding. This VCR is a portable model, which is not bound to comply with the immunity standards. Only an agreement between the VCR owner and the transmitter operator (time sharing) would make co-existence possible.

Very much better is even the very old Grundig VCR 2x8 (1983/84). This VCR achieves nearly the same good values as mentioned in *cq-DL* November 1984, in Figure 6 page 543 for the Grundig VS-200 (VHS). At 3.7 MHz, this VCR too is better than the later introduced limit of 3 V/m.

The VHS model shown in Figure 7 only just complies with the limits of March 31, 1987. It was designed five years ago.

Figure 8 shows the effect of the outstanding screening and shielding of the Sharp Video Recorder having a metal case: Immunity at 3.7 MHz of 6 V/m and at 7 MHz of over 30 V/m.

Measurements by the FTZ (DOC), which were produced at the end of the commission meetings, demonstrated also "that it can be done". Nine VCRs were tested and three went beyond the graph range for VDE-0872 of 140 dB over the

Figure 5: Very low immunity of a portable VCR with separate power supply. VHS. Made in Asia, Date 3/85.

frequency range of 2.5 MHz to 4.25 MHz, this being 3.16 V/m. Four VCRs reached 135 dB (uV). Testing of identical models showed that one was acceptable whilst the other one was 16 dB worse. These results permit the statements:

1. The now-established immunity standards can be adhered to, because the know-how is available everywhere. Well-constructed VCRs had already achieved this three years ago.
2. VCRs, which were distributed by the trade prior to the determination of the present standards, do not deserve the claim "state of the art technology". Some models may well be good or excellent as far as immunity is concerned, whilst others can be 20 dB or even 30 dB worse. The radio amateur (who is being blamed for causing VCI) is not responsible for this. The VCR owner states that he paid good money for the equipment. Helpful co-operation is the only way to obtain a solution, by involving the RFI Measuring Service of the Post Office, who (as a neutral party) has to explain the facts to the owner of the badly designed VCR. A court of law is most likely the least able authority to understand the technical facts. VCRs were quickly exchanged for a different make and model if the VCI was caused by the nearby local radio transmitter, to obtain peace. The latter VCR worked without problems.
3. It is not possible to "harden" electronic entertainment equipment so far that it could handle all possible field strength levels. The radio amateur may have to investigate the possibility of some decoupling of his beam with regard to the position of the neighbour's television set and VCR as indicated by a field strength test.
4. The two involved parties may have to come to some agreement if no technical solution is in sight. A time-sharing agreement between both parties may be feasible. The owner of the VCR could often agree to a time table, because the problems involve usually only the play-back of VCR tapes.
5. A metal case, to obtain the necessary shielding, should not be too hard for a radio amateur to construct and provide. By placing the VCR in such a case and by filtering the input and output cables even the most difficult cases can be solved.

Literature: (In English) EMC Booklet, "EMC in the Amateur Radio Service" IARU Region 1 from page 44, 1984.

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See over page for Figure 8.

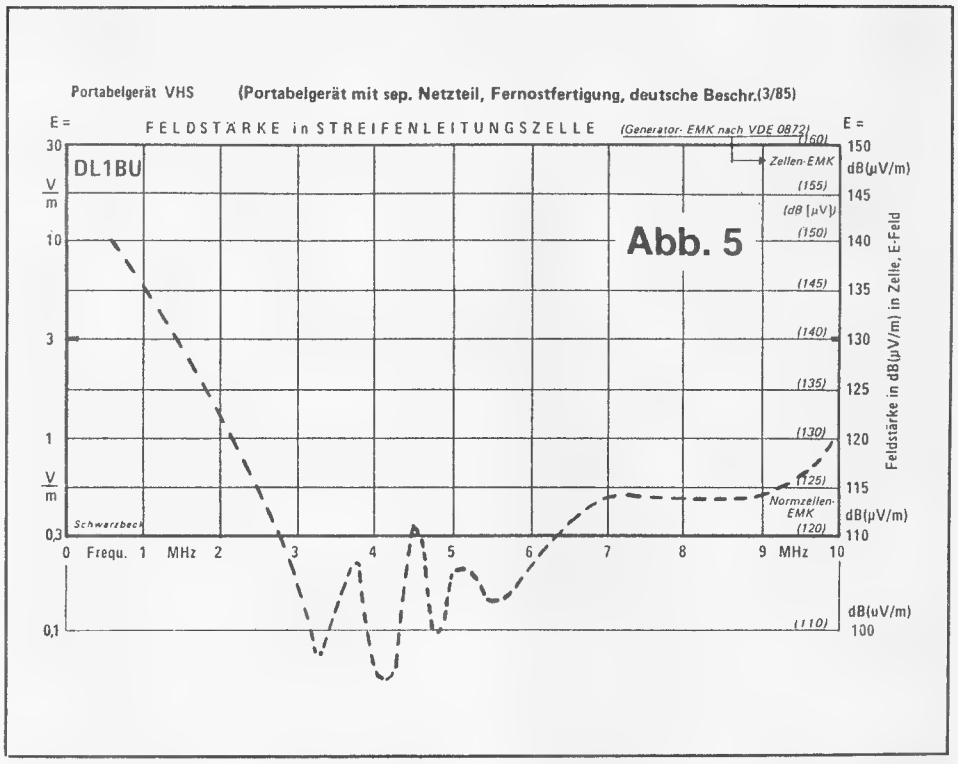

Figure 6: Field strength in test-cell, Grundig VCR 2x8 Stereo, No 2280, FTZ 24/501 SK immunity certificate, very high immunity. 5 dB lower with colour bar test.

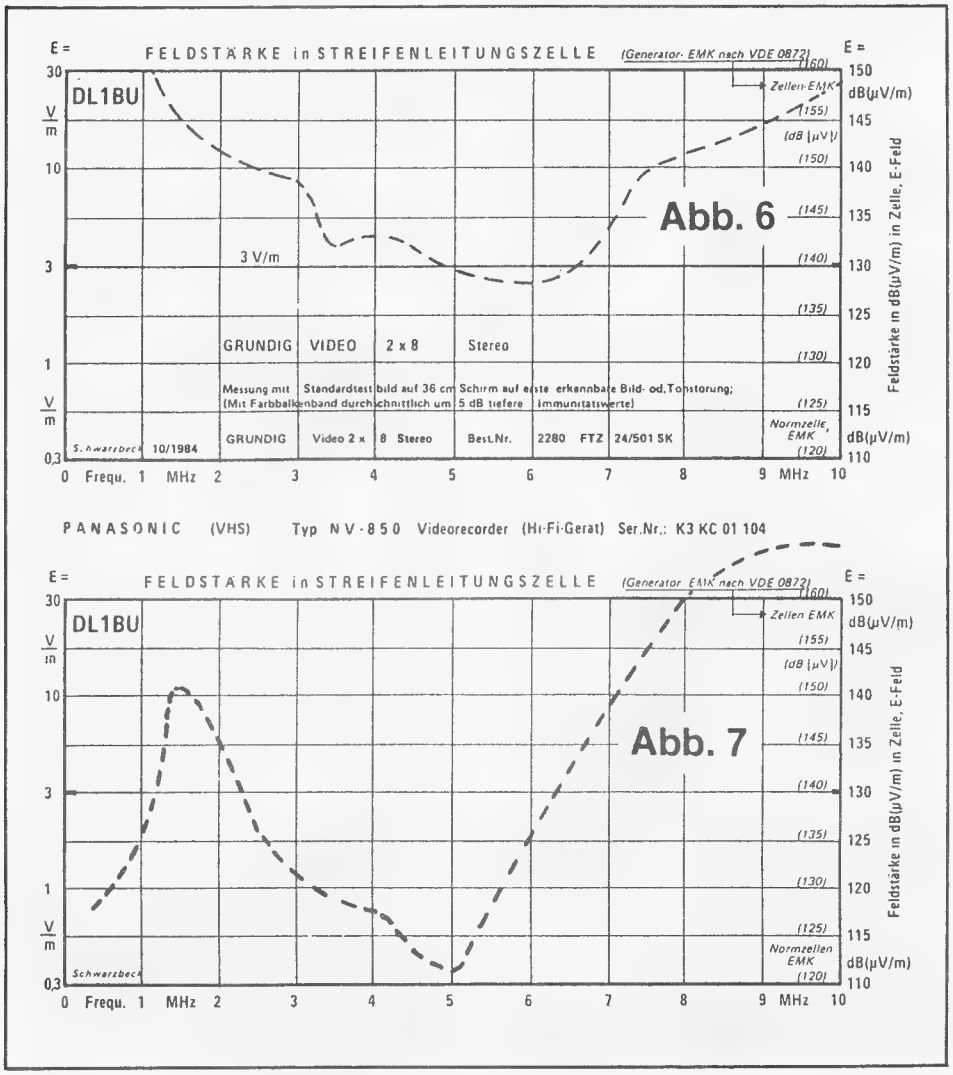

Figure 7: Field strength versus frequency showing low immunity of Panasonic VHS VCR Type NV-850, Serial Number K3KC 01 104.

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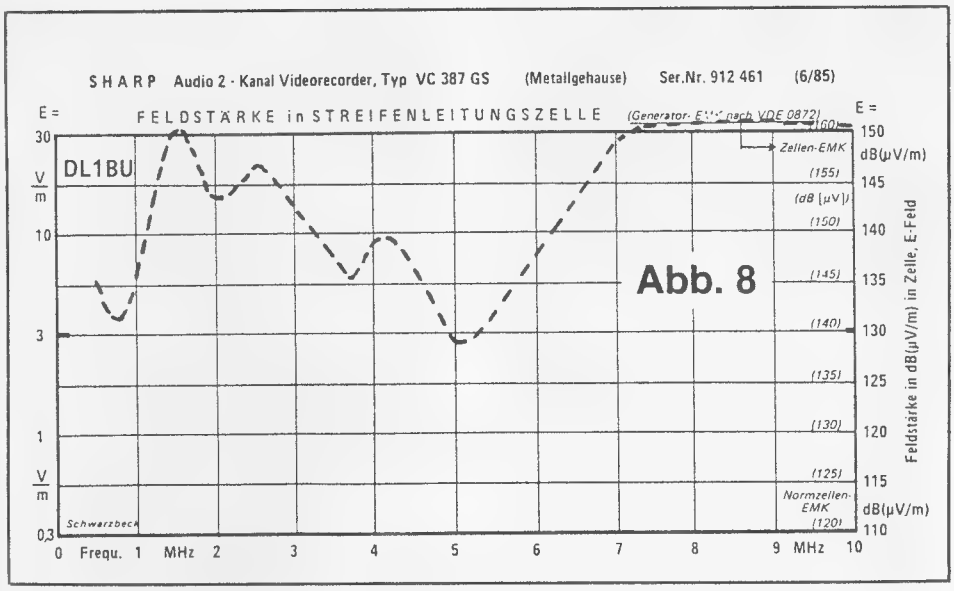


Figure 8: Sharp two-channel VCR Type VC 387 GS (metal case) Serial Number 912 461, Date 6/1985. Very good test immunity, above 3 V/m field strength within test-cell.

OPERATING SCHEDULE OF FO-12

This is the schedule for operation of FO-12. According to power conditions, operation may miss the schedule, but once its condition recovers operation should return as soon as possible. Necessary information will be posted on the BBS of FO-12 when it is available.

JA means mode of analogue. JD is for mode of digital. D for all systems off and DI for systems off except the CPU and memory.

July 7, from 1530 to 1732, and September 14, from 000 to 0204, acquisition of telemetry at every two seconds, when mailbox does not function. A card will be sent for report of telemetry data.

MODE	BEGINS AT MONTH DAY	TIME (UTC)
JD	June 4	0353
DI	5	0259
JD	7	0110
DI	8	0218
JD	11	0546
DI	12	0654
JD	14	0505
DI	15	0613
JD	18	0533
D	19	0439
JA	22	0156
D	23	0304
JA	25	0318
D	27	0131
JA	29	0143
D	30	0049
JA	July 2	0103
D	4	0116
JD*	7	1530
JD	7	1935
DI	8	0143
JD	9	0049
DI	9	2355
JA	13	1409
D	14	1315
JA	16	1328
D	17	1235
JD	20	1356
DI	21	1301
JD	23	1141
DI	24	1020
JD	26	1033
DI	27	1141
D	30	1100
DI	31	1006
JA	August 2	1020
D	3	1128
JA	6	0845
D	7	0751
JA	11	0617
D	12	0724
JA	13	0630
D	14	0536
JD	18	0603
DI	19	0712
JD	20	0415
DI	21	0523
JD	25	0348
DI	26	0457
JD	27	0606
D	28	0511
JA	30	0120
D	31	0228
JA	September 3	0758
D	5	0201
JA	7	0623
D	8	0529
JA	10	0543
D	12	0150
JD*	14	0000
JD	14	0610
DI	15	0516
JD	17	0124
DI	18	0435
JD	21	0355
DI	22	0301
JD	24	0314
DI	25	0220
JA	27	0234
D	28	0140
JA	October 1	0100
D	3	0113
JA	4	2325
D	6	0032
JA	8	1339
D	9	2258
JD	12	1406
DI	13	1312
JD	15	1325
DI	16	1231
JD	18	1245
DI	19	1151
JD	21	2016
D	22	1922
JA	26	0936
D	27	1043
JA	29	0855
D	31	0909

QSP

RUSSIA HAS NO-CODE LICENCES

The Soviet Union has three amateur radio station licence grades which do not have CW examination as a prerequisite.

A Novice licence allows operators to use five watts on 160 metres. Another grade gives 10 watts on 1.8 MHz, 28 MHz and above with a power limit of 10 watts.

The third class allows 50 watts on all bands except 20 metres, where CW is permitted on the low end of the band.

Russia's fourth licence grade with a CW examination allow 200 watts on all bands. There were 300 000 radio amateurs in the Soviet Union.

—Contributed by Sam Voron VK2BVS from information supplied by RA0CDM

PUBLIC TELEVISION TESTS

Transport and Communications Minister, Senator Gareth Evans, says the government is considering whether it is possible and appropriate to dedicate a UHF frequency specifically for public television.

But, Senator Evans says UHF channels are in scarce supply in capital cities. He made the comment in announcing the Australian Broadcasting Tribunal decision to grant a test transmission permit to the public television aspirant group, Unlimited Television Incorporated.

Since the mid-1970s, there has been many proposals for public television services in Australia. They have come from community-based groups, independent film makers and education bodies.

Senator Evans said it must be clearly understood the government had made no commitment to the introduction of public television. But I would be happy to see interested groups have an opportunity to show their wares and test public reaction, he said.

Unlimited Television plans to transmit about six hours of programs from 6 pm each night during June 5 to 11.

The Minister's Office in Canberra, told *Amateur Radio* magazine the tests will be carried out on UHF Channel 47, in Melbourne.

That frequency had been chosen because it was unrelated to any existing wide area service and could readily be seen by viewers with sets to watch SBS television, a spokesman said.

Unlimited Television said it was negotiating with the DOTC on remaining technical matters including the type of transmitter, power output, and transmitter site.

—Contributed by Jim Linton VK3PC

1987 BHP SCIENCE PRIZE AWARDS

An amateur was one of 23 national finalists in this years awards. VK5ZWI had researched whether it was possible to predict when UHF amateur television could be broadcast away from the Adelaide area and had successful results.

The BHP Science Prize is Australia's award for excellence in scientific research by school students and is jointly organised by BHP, the CSIRO, and the Australian Science Teachers' Association, with support from Westinghouse Electric Australia. The 1987 prize attracted 150 entries from students aged between 13 and 18 years.

—Adapted from the *Canberra Times*, February 23, 1988 and contributed by Ron Henderson VK1RH

Club Corner

RADIO ENTHUSIASTS' CLUB OF THE BLIND/KOOYONG RADIO CLUB

At a Special General Meeting, held on February 17, 1988, the members of the Radio Enthusiasts' Club of the Blind adopted a revised constitution and a new name.

For some time now, these changes have been considered necessary so that the club can expand its membership and provide a standard radio club for radio amateurs in the inner eastern suburbs of Melbourne. Nonetheless, membership will not be restricted to just those in the locality.

As Full Membership of the club is no longer exclusively for visually handicapped enthusiasts, the name of the club has been changed to the Kooyong Radio Club. Now any Australian radio or electronics hobbyist, disabled or otherwise, is invited to apply for membership in writing to the club's committee. For further details, write to the Secretary or attend the next General Meeting, which will be held at 8 pm on Wednesday, June 15, at the H M Lightfoot Centre, 454 Glenferrie Road, Kooyong, Victoria.

In accordance with the new rules, all members can enjoy Full Membership rights and privileges and visually impaired members are encouraged to participate along with all other members. The club will still offer special facilities for those with eye sight impairment when pursuing their radio interests. Also, country and interstate members are welcome to communicate via the postal service or on air.

At present, all members are charged a small annual subscription. The Kooyong Radio Club meets regularly at 8 pm, on the third Wednesday each month at the Centre which is located opposite the Kooyong Tennis Courts. It is hoped that a suitable transmitting site can soon be established close to the meeting room for the club station, VK3DBN.

The club is a member club of the Victorian Division of the Wireless Institute of Australia. Please send all correspondence via the Club Secretary, John Machin VK3CCC, 21 Paget Street, Hughesdale, Vic. 3166, phone (03) 568 2649.

—Contributed by John Machin VK3CCC, Secretary, Kooyong Radio Club

DARLING DOWNS RADIO CLUB

Recently the Darling Downs Radio Club took part in the Hobby-n-Craft Spectacular conducted by the Rotary Club of Toowoomba South, which was held at the Toowoomba Showgrounds over the weekend from Friday night to Sunday, February 19, 20, 21.

Beginning at 0000 UTC, Friday, members erected a mast supporting a two metre two-by-five-eighth wave vertical and a HF windom antenna, using an ironbark tree and the Founders Pavilion roof, as end supports for the Windom. The steel building had to do duty as an earth because a stake could not be driven due to either foundation concrete or native rock.

Arranged inside, on a large table, were HF and two metre equipment, antenna matching units, a glass RTTY display using an inexpensive computer and an area of home-brew and ex-commercial equipment adapted for amateur radio use.

Informations sheets, call books, QSL cards, magazines (*Amateur Radio* included), some enlarged cartoons featuring amateur radio, filled out the display. Hessian was used to cover the steel walls in the corner where the radio display was housed, and this proved useful for supporting maps, notices and posters on amateur radio.

An on-air display of glass RTTY was arranged on 146.500 MHz with Graham VK4AGN and Roley VK4AOR, operating from the base and Tom VK4BTW, Ben VK4APT and Greg VK4ZDC providing outside contacts. (There was one embarrassed operator though when he arrived home to make a RTTY contact only to remember that the display being used at the base was using his monitor!).

The working display of early railway telegraph equipment, by Keith VK4NCM, proved popular with young and old alike. Historically, Keith was the last railway telegraph operator when Toowoomba ceased using the system in May 1974. (This accounts why Keith is such a "hot" CW operator).

The two metre rig on 146.500 MHz Simplex was the main communication channel. Ron VK4BRZ, Dougal VK4KUY and Eric VK4ADA took messages and provided QSPs with other stations who could not reach VK4WID direct. A first, and unusual, contact was with Ron VK4AGS Aeronautical Mobile. Ron was located at about 4000 feet above the area in a glider!

Demonstrating amateur Radio at the Hobby-n-Craft Show are: from left — Keith VK4NCM, Kev VK4CCJ, Graham VK4AGN and Dougal VK4KUY.

The club, operating under the call sign VK4WID, joined in the Intruder Watch Net on 3.594 MHz on Friday night and Theo VK4KHM, under the call sign VK4WID, conducted the Saturday night Darling Down Radio Club 80 metre net from the display when 15 stations joined in. A one-contact award was promoted for the occasion of the Bicentennial Hobby-n-Craft Spectacular.

Some interesting HF contacts made over the weekend included:
Rafi 4X4FR in Tel Aviv; Paul IK8ETA, Salerno, Italy; Kasu VS6VZ, Hong Kong; Hiro JM1LAW, Tokyo; Joe N7JAA, Sultan, Washington State; Francis KA5RYJ, Louisiana; Peter ZS5XA, 200 kilometres north of Durban; Patty CE0GHO, Easter Island and Mark HL1AFD, Seoul, Korea.

An opportunity occurred during the weekend to contact Scouting Association officials toward facilitating and improving liaison between Scout groups and radio amateurs for the running of Jamboree on the Air (JOTA), and other activities.

Club members at the stand were kept busy answering questions, greeting friends and visiting amateurs and encouraging would-be amateurs.

Members who donated time and equipment were:
Graham VK4BGA, Graham VK4AGN, Eric VK4ADA, Keith VK4NCM, Tom VK4BTW, Derek, Ray and Col (all studying for licences), Dougal VK4KUY, Ben VK4APT, Greg VK4ZDC, Roley VK4AOR, Theo VK4KHM, Kev VK4CCJ and Roy VK4RE.

Whilst dismantling the display on Sunday evening, the somewhat weary crew agreed that the effort was well worthwhile considering the interest created in the hobby — and some were even thinking up improvements for "next time"!

—Contributed by Steven MacQueen, Honorary Secretary, Darling Downs Radio Club

SUMMERLAND AMATEUR RADIO CLUB

Following is the club social calendar for the rest of 1988. The club has tried to obtain a good spread in the venues so as to make these days more attractive. With weekends away and the operation of portable stations, an increase in interest from members and non-members is envisaged. These weekends depend on you, let us make this year better than ever before.

A warm welcome is extended to any amateur, or SWL who is visiting the New South Wales north coast. Contact the Secretary of the club or check into the Club Net.

June 25	Sit-down Dinner — TBA
July 31	Mini Hamfest — Richmond Hill
August 28	Woody Head
September 24	Sit-down Dinner — TBA
October 29/30	Toonamba Dam (Kyogle)
November 27	Christmas Barbeque — Richmond Hill
December	Nil

DIRECTORY OF THE SUMMERLAND AMATEUR RADIO CLUB — Founded 1961
Club and Net call sign — VK2AGH

Repeaters	— VHF 146.800 MHz, VK2RIC, Lismore — UHF 438.675 MHz, VK2RSC, Lismore VHF Packet, VK2RPL, Mount Nardi
President	Duncan VK2DLR
Vice-President	Rob VK2BBR
Secretary	Peter VK2XHL
Treasurer	John VK2JWA
Publicity	Jim VK2ESI
Member	Ken VK2TQB Scott VK2XGM
WICEN	Peter VK2PF
Repeaters	
RIC/RSC	VK2AWH, VK2BCW, VK2ZFS
RBB	VK2YRL, VK2XGM, VK2XHL
Packet	VK2BEV, VK2AGE, Memb $10 pa

Meetings

Annual General — January or February

General, Formal — Called as required

Workshop — Thursday nights, First, Third and Fifth at Kadina High School. Second, Fourth and Holidays at the Club-room.

Nets

HF — 3.605 MHz, Monday to Friday at 2030 UTC. Sunday at 1000 UTC.

VHF — 146.800 MHz, Friday at 1000 UTC on the Lismore repeater. Sunday at 0100 UTC, the VK2 WIA News.

* Deduct one hour during Daylight Saving Time.

LAS BALSAS AWARD

Created to commemorate the 1973 Las Balsas raft expedition across the Pacific and the part played in it by amateur radio.

Awarded to amateurs and SWLs from Australia and New Zealand for 15 points, overseas require seven points.

Club Net Control Station is worth five points, any other club member, one point, on any mode, band or time.

Applications should include a log extract and $A2 and be posted to the Club Address, PO Box 524, Lismore, NSW. 2480.

—Contributed by Jim Cunningham VK2ESI, Publicity Officer, Summerland Amateur Radio Club

SOUTH EAST RADIO GROUP

The South East Radio Group will again be holding its very popular SERG Convention during the Queen;s Birthday weekend. in June.

As a special Bicentenary contribution to the hobby of amateur radio, the South East Radio Group is currently involved in a concentrated media campaign to publicise the Convention and the hobby. To this end, the general public will be invited to attend the Convention on the Sunday afternoon.

As well as those events generally associated with the Convention over the years, there will be other activities.

A display of vintage radio equipment (both commercial and amateurs) will be held and visitors are invited to bring their favourite piece of equipment for display. This may be anything from a vintage crystal radio receiver to that "you beaut" phasing transmitter you built in the 1950s. A prize will be awarded for the best single piece of equipment displayed.

This year, there will be many more Trade Displays involving state-of-the-art technology, including the latest in computers and, as a special treat, a demonstration of Satellite Television.

For the interest of the general public there will also be a working "Amateur Shack" displaying some of the modes available to amateurs. Of course, the Bicentenary call sign, VI88SA, will be used during the Convention and will provide another opportunity to work this "once in a lifetime" call sign.

So be in it and come alonly enjoy yourself and at the same time help promote amateur radio. Registration forms and convention programs are available from the South East Radio Group Inc, PO Box 1103, Mount Gambier, SA. 5290.

—Contributed by David Edwards, Secretary, South East Radio Group Inc

URUNGA RADIO CLUB

Although there was rain predicted for the Easter Weekend, 48 visitors attended the 40th WIA Urunga Radio Convention on April 2 and 3, 1988.

Saturday's Events and winners were as follows:

20 metre Talk-in	1st VK2EFM; 2nd VK2KZV
2 metre 2 Fox Pedestrian	1st VK2DGT; 2nd VK2BYY
2 metre 2 Fox Pedestrian	1st VK2KZV; 2nd VK2XDW

Sunday's Events and winners were as follows:

The Urunga all-band Scramble	1st VK2AMV; 2nd (a tie) VK2KZV and VK2EFM
40 metre Pedestrian Fun Hunt	1st VK2BYY; 2nd VK2ZVY
2 metre 3 Fox Mobile Hunt	1st VK2EFM; 2nd VK2XDW
2 metre Mobile Talk-in	1st VK2KZV; 2nd VK2EFM

Indoor Events and winners:

Technical Quiz	1st VK2BYY; 2nd VK2XU
Non-technical Quiz	Tie: VK2DCM & VK2YGQ
CW Sending	VK2MPK
Genius Capacitor Network Problem	VK2BYY
Expert Capacitor Network Problem	VK2YGQ
Guessing number of capacitors in bottle	VK2DLM
Old Circuits Competition	VK2XU
VFO Problem	VK2BYY

Ken VK2DGT, on the trail of the Fox.

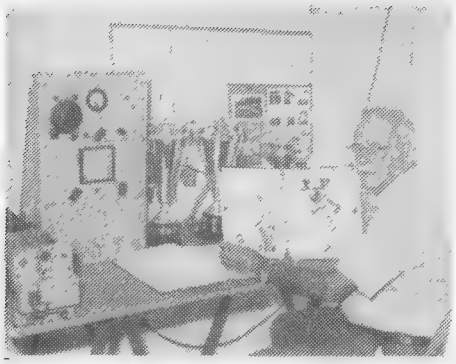
Chris and Judy Eddy, the local Coffs Harbour Dick Smith agents had a terrific display of radio, kits and computer equipment whilst Ian VK2XU, from DX Engineering displayed the latest in Kenwood technology for HF and VHF0 Disposals tables were very busy with plenty of equipment on offer. John VK2AMV, brought his home-brew 1950s vintage HF transmitter (used to win the scramble in 1951) and two metre AM mobile transceiver complete with rotary inverters and log book which made an extremely interesting display and brought back many memories to the old timers present.

John also screened some old 16 mm films on Saturday night which were filmed in Urunga about 1950. VK2EVB had a 30 metre packet station operating from the convention, but due to lack of contacts, he printed the RTTY broadcast on Sunday.

Allen VK2EFM, won the Jack Gerard Memorial Shield and will be the first name engraved on the trophy. He was also presented with a personal trophy for his radio shack.

Overview of the Convention.

From left: Ian VK2XU, Merv VK2DMS and Judy Eddy.



Peter VK2PA, reminisces about the Old Days as he views the display by John VK2AWV.

The Happy Foxhunter, alias Graham VK2KZV

The Jaycar Electronics digital capacitance meter (worth $220) was won by Mr C Edmondson, of Port Macquarie, who is no doubt very pleased with his prize.

The Convention Committee would like to express their grateful thanks to Jaycar Electronics, Dick Smith Electronics and Tandy Electronics for their generous assistance in the provision of pamphlets, catalogues and prizes.

A terrific weekend was enjoyed by all and a very tired group of amateurs left for home on Sunday evening.

ar

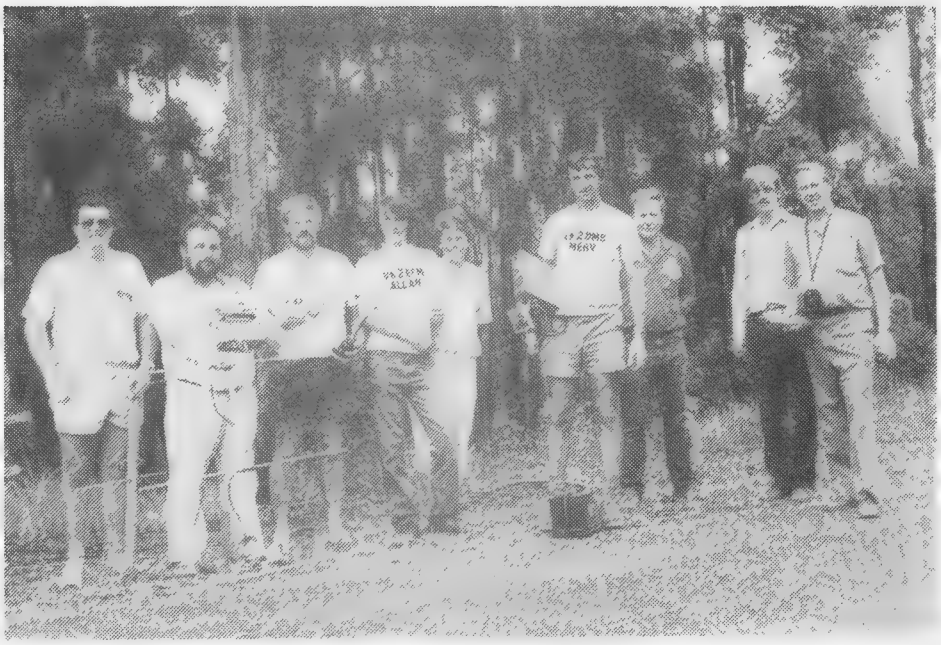
CORRECTIONS TO TOPICAL TECHNICALITIES — 3

$A_{amax} = G\lambda^2 / 4\pi$

λ/s dipole $A_a = 1.64\,\lambda^2 / 4\pi = 0.13\,\lambda^2$

Also, fourth paragraph, second line . . . ϕ watts per square metre. . .

—Lindsay Lawless VK3ANJ

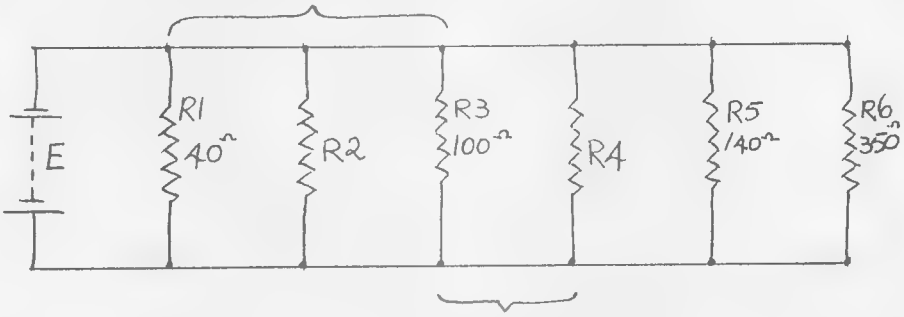


The intrepid Foxhunters.

TRICKY PROBLEM

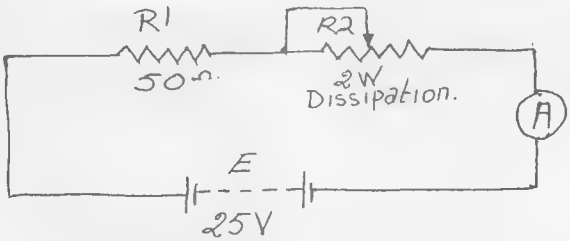
Any good amateur should be able to solve the first problem, but can anyone solve the second? It is a little harder than the first but it can be done.

Current through R1 + R2 + R3 = 5.5A



Current through R3 + R4 = 2A

PROBLEM No 1 — Find the total current in the circuit.



PROBLEM No 2.
Variable resistor R2 can be adjusted to two different values at which it will dissipate two watts. What are the two circuit currents?

See next month's AR for the solutions.

—Contributed by Frank Wright VK2BZ, 18 Second Street, Blackheath, NSW. 2785

WICEN News

Dennis Gibson VK1DG
39 Lyall Crescent, Kambah, ACT. 2902

"THREW A BEARING NEAR MOWLONG, REPAIRED AT DUBBO, ARRIVED AT WEST WYALONG OKAY"

A small portion of the display of cars at the Canberra showgrounds arena.

—**Photograph courtesy of** *The Federal Capital Press of Australia*

Such is the spirit of a motoring era long past. We were treated to a glimpse of the past with the running of the 1988 *Bicentennial Castrol World Rally* for veteran and vintage cars, in February and March this year.

With 10 years of planning, this Australia-wide event resulted in over 1000 veteran and vintage cars taking part in our bicentenary celebrations.

The rally Executive Director, Ian Irwin, contacted WICEN four years ago to establish a nation-wide communications network to co-ordinate the rally. The WIA Federal Executive endorsed this exercise as part of its official 1988 Bicentennial celebrations. This event is believed to have been the longest running nation-wide WICEN operation ever conducted in Australia.

Approximately 60 amateur operators in the field spent many hours keeping Rally Headquarters, in Canberra, informed of the rally progress. Another 30 amateurs maintained HF operations in the Australian Capital Territory before the rally converged on Canberra, whilst 20 operators provided local communications for the events in and around Canberra.

The rally commenced on schedule with a message, received on 20 metres, stating that 27 vehicles had left Darwin on February 21. They all arrived in Alice Springs, although four vehicles required assistance.

The West Australian contingent mobilised on February 28 with 22 vehicles heading towards the desert where they experienced 43 degree temperatures. A Perth command station co-ordinated communications with the mobile WICEN operator who escorted the rally to the South Australian border.

By the time the cars from Perth and Darwin had reached Adelaide, the Hobart cars were being loaded onto the *Able Tasman*. Under the watchful eye of the Tasmanian operator, the details of the cars were recorded on his own manifest for forwarding to Canberra.

At this time, 960 vehicles from Sydney, Brisbane, Adelaide and Melbourne were preparing for their start. With no delays, the vehicles began their nine day tour towards Canberra. The rally entrants were treated to enthusiastic crowds at their daily stopovers, and the generally good weather ensured regular civic receptions, tea parties, and visits by large numbers of school children.

Considering the large number of vehicles and people involved, there were very few problems in the running of the rally. All of the runs arrived in Canberra on schedule, with only a few vehicles retiring from mechanical failure. There were a small number of minor collisions on the way, but no reports of injury. WICEN message handling was very good, with little clarification required although the following message raised a few eyebrows!

"Entrant B71 1911 Daimler in Goulburn with Ventilated Motor."

After the vehicles arrived in Canberra, the communications network reduced to cover the events organised throughout the region. The major function was co-ordinating a display of over 1000 vehicles, valued in excess of $80 million, and visited by 33 000 people at the Canberra showgrounds. WICEN operators also accompanied club runs out of town to minimise traffic congestion, and the final activity was the Grand Parade of vehicles through the city.

The operation was of immense value to the organisers of the rally, and to WICEN as a major training exercise. It would have been impossible without the co-operation of all the operators in the States and Territories, and the WICEN Regional Co-ordinators who spent many hours organising the stations. To you all — thank you.

—Dennis Gibson VK1DG
Richard Elliott VK1ZAH
ACT WICEN Co-ordinators

AMATEUR RADIO IN FICTION

There is not a great deal of material to investigate when writing an article on amateur radio in fiction. I can remember a film which used a young amateur to save a ship at sea from a gang of villains, and a novel about the disappearance of a character in the frozen Yukon, in which amateur radio played a significant role.

Apart from those, my main recollection of radio as used by fiction writers has been frustration at their obvious technical ignorance of what it can and cannot do. So, when I decided to enter into the fiction writing field myself I was determined to include amateur radio and adhere to the facts.

Since my writing is aimed at young people, it seemed an excellent way of doing something about the problem repeatedly raised in this journal of how we can interest more youngsters in out hobby. There may be many reasons why modern youth finds other areas of electronics more attractive than amateur radio, but at least one of them is that they cannot become interested in something they have never heard about.

To expect them to start on literature with a title like *How to become a Radio Amateur* presupposes some knowledge of and interest in the subject in the first place. However, if they find a radio amateur using his hobby to good effect in a story, seeds might be sown towards further investigation, and *How to become a Radio Amateur* could become a significant book to them.

I have recently published the first of a series of short novels for the 10 to 12 age group featuring a once world famous magician who is also a radio amateur. Those who wonder at the connection between magic and radio may be interested to know that the magazine *Electronics Australia* was originally *Radio and Hobbies,* and early issues included a page on the hobby of Magic! I have maintained both hobbies since those days and they naturally find a place in what I write.

As I wanted to use call signs in the story, which is set in the south-east of South Australia, I received permission to use that of the South East Radio Group (SERG) radio club, along with my own, and acknowledge this in the front of the book. One cannot pull letters out of one's head because they either do or will belong to someone.

On a trip to the south-east to promote the publication, I did a number of radio and television interviews. It was surprising how often a question arose about SERG and amateur radio in general. Our hobby received a great deal of publicity by this means. I am hoping that the fact that the book is finding a place in school libraries will do some small thing towards enhancing the future of one of the world's most valuable hobbies.

Anyone interested in using the book as a gift to young family or friends can secure it from VK5VH, QTHR. The price is $4.95, post free anywhere in Australia. It is called *The magic of Mr Ree.*

Contributed by Ron Holmes VK5VH, 6 Keirana Avenue, Port Noarlunga, SA. 5167

ICOM IC-4GAT UHF HAND-HELD

When it comes to squeezing the maximum amount of circuitry and the greatest number of wanted features into the smallest possible package, Icom has led the field. From its small multiband units and tiny UHF mobiles, to an incredibly compact rage of micro-hand-helds. Icom transceivers keep getting smaller but the features list just keeps growing.

Icom's latest hand-held, the IC-4GAT, is a pocket-sized package, yet it boasts the highest power output of any UHF hand-held yet released and the most memory channels.

This tiny transceiver, with full six watts of output power from the optional IC-BP7 13.2 volt battery pack, plus 20 memory channels and a call channel memory, is designed around a series of smart, low-dissipation power saving circuits which reduce battery power consumption to just 25 percent of normal during standby receive operation, greatly extending the time between re-charging.

Frequency entry is simplified with a state-of-the-art version of the IC-2A thumb-wheels — digital touch-step switches mounted on the top panel with the feel of thumb-wheel switches.

Memory and VFO operation is enhanced with full duplex operation, sub-audible tone capability and two different scanning modes, plus the convenience of memory skip scanning to eliminate temporarily unwanted memories.

A unique audio squelch monitoring circuit lets you set the squelch threshold at a comfortable level, but still hear weak audio signals that would not break the squelch.

When sub-audible tone calling is used, a special 'pocket beep' function lets you know when the correct tone combination is received (requires optional UT-40 tone squelch unit).

A backlit LCD display ensures that the unit can be operated in very dark or zero-light situations, whilst a convenient timer circuit extinguishes the backlight after five seconds if no switch is pressed, saving battery power!

See the IC-4GAT UHF amateur band hand-held now at your nearest authorised Icom dealer. For details of your nearest dealer, contact Icom Australia, 7 Duke Street, Windsor, Vic. 3181, or telephone (008) 33 8915 (local call charge).

ICOM IC-781

When Icom released the IC-761 HF amateur radio transceiver late last year, it seemed that this was the peak in the evolution of the sophisticated 'super-base' line — a that would take many years to eclipse.

However, Icom has now scooped the pool with the release of a vastly more sophisticated HF "super-base" with features that will surprise even the most seasoned reviewers.

The central feature of the Icom IC-781 is a large multi-functional cathode ray tube (CRT) providing visual, menu-driven tracking of memory data storage, multiple filter configurations and VFO settings.

The CRT also doubles as a powerful spectra-scope, displaying up to 200 kHz of the spectrum in graphic detail for instant location of interfering signals, close analysis of received transmissions, wideband DX signal spotting and visual tuning of digital transmissions.

CRT spectra-scope bandwidth is selectable at 50, 100 or 200 kHz, and a highly accurate built-in log amplifier allows accurate measurement of received signals from 0 to 50 dBu.

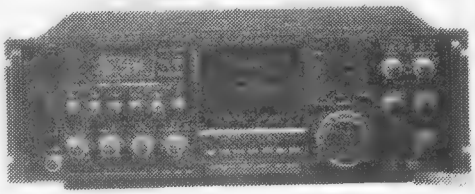
The IC-781 features a Dual Watch facility which allows simultaneous listening on two separate frequencies anywhere in the HF spectrum.

Two independent passband tuning (PBT) circuits, one on the 9 MHz second IF and the other on the 455 kHz third IF, electronically narrow the bandwidth of the IC-781 by using computer driven dual rotary encoders, combined with an IF shift facility, to eliminate adjacent signal interference.

An advanced array of high quality, high shape factor filters in the IC-781, the basis for the twin PBT control, also provide standard 500 Hz CW filtering (250 Hz filter optional), plus 9 MHz and 455 kHz filters at the touch of a button.

A delay-controlled trigger circuit provides the IC-781 noise blanker with the ability to blank repetitive pulsed noise up to a maximum of 15 milliseconds. Together with an MCF filter at the front of the noise amplifier, this allows the IC-781 to fully eliminate Over-the-Horizon-Radar (OTHR) (Woodpecker) signals, even on adjacent frequencies.

Icom's advanced direct digital synthesis (DDS) frequency locking system, a feature of all new Icom transceivers, provides the IC-781 with unmatched frequency stability and the fastest lock-up time of any transceiver yet released, making it ideal for high-speed switching applications like AMTOR and Packet Radio.



Designed with computer control in mind, the IC-781 contains Icom's remote control Local Area Network (LAN) system using the unique Icom Communication Interface-V (CI-V). a carrier sensing multiple-access computer interface using the CSMA/CD collision detection standard. Although sounding complicated, the CI-V system allows simple computer interfacing to all new Icom transceivers via any RS-232 serial port.

The IC-781 comes equipped with an electronic CW keyer (five to 60 WPM full break-in or up to 100 WPM non-QSK), front panel controlled VOX facilities, all mode operation without additional boards, audio passband and notch filtering, transmit and receive incremental tuning (XIT/RIT), crystal frequency marker, IF monitor, receive preamplifier and variable attenuation from 10-30 dB.

Listing every feature of the IC-781 would be a mammoth task, but the huge memory storage capability, multiple scanning facilities, separate mode selection for RTTY and data operation, or the optional rack-mounting handles cannot be overlooked.

The only way to get the full picture of the IC-781 is to visit your nearest Icom dealer and take a look for yourself.

For further details contact Icom Australia, 7 Duke Street, Windsor, Vic. 3181, or telephone (008) 33 8915 (local call charge).

Q R M from VK7

John Rogers VK7JK
VK7 BROADCAST OFFICER
1 Darville Court, Blackman's Bay, Hobart, Tas. 7052

Meetings of Branches in June will take place as follows:
Northern Branch — Launceston Maritime College on Friday, June 10, at 8 pm.
Northwestern Branch — Penguin High School on Tuesday, June 14, at 7.30 pm.
Southern Branch — Activity Centre, 105 Newtown Road, Hobart, on Wednesday, June 1, at 8.15 pm, preceded by an Executive Committee Meeting at 7.30 pm.

The address for the Southern Branch is 105 Newtown Road, Newtown, Hobart, Tas. 7008, not as published in April's AR.

Elsewhere in this magazine is an article by Dennis Gibson VK1DG, the WICEN Co-ordinator, about the 1988 Bicentennial Castrol World Rally. A letter was received by the northern WICEN on this subject, thanking them for their part in the event and pointing out that it had been the longest running nation-wide WICEN operation ever conducted in Australia.

The WICEN exercise "Callout" held in the south during April was intended to test procedures and give further practice in the use of pro-words. There were 19 amateurs who took part, and although some of the messages were humorous, the intent was quite serious.

The Southern Branch reports that they have had a change of President, as Stuart VK7NXA, has had to withdraw because of an increased work and study load.

VK7WI BROADCASTS

We are pleased to report an extra news collector in the north. He is Leon VK7NHG, and very welcome he is too. Do not forget that, for VK7s — and others, of course — who are on their way to warmer climes, there is a VK7WI relay by Arthur VK7SE, on 14.140 MHz every Sunday morning at 9.30. Keep in touch with home news, and also let everyone keep in touch with you. The 80 metre repeat on 3.590 MHz, Tuesday evenings at 7.30 pm, may be receivable in various mainland States. Contributions, by letter or tape, are most acceptable for these broadcasts. This also applies to home-bound or State-bound amateurs who have a point of view to put over on-air.

TARC 88

The venue is the Polish Club, just a short way up-the-road from the Activity Centre, the two centres having a combined function for the occasion. The date is the last weekend in October. Demonstrations and constructional activities are to be included in the program, as are talks on subjects of wide interest. We hope that many amateurs from all over VK7 will visit during that weekend. For TARC, the restoration of some early post WWII VHF and UHF home-brew is in progress, in conjunction with the Max Loveless Collection. To this end, we need several RL18 valves — the little double-ended peanut shaped triode valves (Mullard). These were considered excellent valves by post-war home-brewers. Contact Barry VK7RS, the Collection Co-ordinator, QTHR, or C/- GPO Box 215C, Hobart, Tas. The trustees of the collection also state they are producing a newsletter for circulation to interested parties, perhaps twice a year. Anyone who would like to receive same, which would contain items of historical interest, drop a line to the Co-ordinator at the address given above. It will be gratis.

By the time you read this, the southern two metre repeater on Mount Wellington should have been fitted with its new controller, which was on display for all to see at the April branch meeting. Such was its sensitivity to static that it was definitely a "hands-off" display, but VK7ZTA was there to explain its operation. Repeater linking was never like this before!
73, John VK7JK

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AMATEUR AND NOVICE AMATEUR OPERATOR'S CERTIFICATE OF PROFICIENCY
February 16, 1988

STATE	SECTION "M" (Theory AOCP)			SECTION "O" (Theory NAOCP)			SECTION "K" (Regulations AOCP & NAOCP)		
	Candidates	App Rec/Sat/Pass		Candidates	App Rec/Sat/Pass		Candidates	App Rec/Sat/Pass	
New South Wales	73	65	22	30	27	15	51	43	29
ACT/Canberra	9	9	3	7	6	3	16	15	10
Victoria	73	60	22	24	18	9	42	33	23
Queensland	49	41	11	23	16	7	33	27	22
South Australia/Northern Territory	26	26	11	10	10	4	22	22	16
Western Australia	34	34	7	14	13	6	21	20	14
Tasmania	7	7	1	6	6	2	5	5	2
TOTAL	271	242	77	114	96	46	190	165	116

STATE	SECTION "LS" (Telegraphy-Sending AOCP)			SECTION "LR" (Telegraphy-Receiving AOCP)			SECTION "NS" (Telegraphy-Sending NAOCP)		
	Candidates	App Rec/Sat/Pass		Candidates	App Rec/Sat/Pass		Candidates	App Rec/Sat/Pass	
New South Wales	26	21	12	42	32	13	26	22	20
ACT/Canberra	4	3	2	4	4	1	6	3	1
Victoria	35	26	20	65	53	18	26	21	20
Queensland	26	19	16	39	31	5	17	11	10
South Australia/Northern Territory	8	6	6	17	13	3	9	8	7
Western Australia	19	16	11	32	26	6	15	10	9
Tasmania	5	5	3	13	13	5	3	3	3
TOTAL	123	96	70	262	172	51	102	78	70

STATE	SECTION "NR" (Telegraphy-Receiving NAOCP)		
	Candidates	App Rec/Sat/Pass	
New South Wales	34	26	16
ACT/Canberra	8	4	1
Victoria	37	31	21
Queensland	23	16	7
South Australia/Northern Territory	11	9	1
Western Australia	18	15	9
Tasmania	4	4	3
TOTAL	135	105	58

Will you be a SUCCESSFUL CANDIDATE in the next statistics? ? ?

Forward Bias

Norm Gomm VK1GN
GPO Box 600, Canberra, ACT. 2601

1988 BICENTENNIAL CASTROL WORLD RALLY

One of the major events for Canberra this year was the 1988 Bicentennial Castrol World Rally in February and March (see WICEN News, this issue). A large number of amateurs were involved with these operations as the cars approached Canberra.

VHF communications achieved prominence in its own right once the vintage and veteran cars started to arrive in the Australian Capital Territory. Prior to this, VHF had been used to provide local links between Rally Headquarters and HF net control stations.

Like the HF co-ordinator, the VHF co-ordinator came to the same conclusion; he had suddenly contracted some form of terrible affliction which no other amateur wanted to catch. Each time he came on air, all other operators instantly QSYed or, worse still, went QRT. Even the "Kachunkers" on the two metre repeaters went quiet. This, he was assured, was entirely coincidental and had nothing to do with his search for operators. This requirement was:

✸ 5 Tuesday	1000 to 1700
✸ 5 Wednesday	1000 to 1700
✸ 10 Friday	0900 to 1700
✸ 5 Friday	1700 to 2030
✸ 10 Saturday	0530 to 1830
✸ 7 Sunday	1000 to 1330

Thankfully, despite salt-mine and family commitments, the camaraderie of the amateur community won through and all places were filled.

Tuesday, Wednesday and Friday were very easy days. So much so that many operators were stood down without seeing any action. Friday night and the weekend promptly made up for it; and how, in style.

It is difficult to conceive the magnitude of an exercise of marshalling in excess of 1000 vintage cars into a display arena, ensuring overnight security, co-ordinating crowd control of 33 000 people and keeping convoys united.

On Saturday night and Sunday morning, some 700 vintage cars assembled into convoys. Each convoy, end to end, extended over five kilometres and, with the willing and able involvement of the ACT Police, proceeded smoothly without disruption, to its destination.

Saturday attested to the co-operation and professionalism of some 70 cars from the arena, across the major traffic route feeding the city in 35 minutes!

In closing, the success of the event was in no small part due to the willing and tireless assistance of each of the operators who deserve WICEN's sincere thanks. This has been endorsed by the Rally Director, who made a specific point of conveying his gratitude for the service provided by WICEN.

VK1 OFFICER BEARERS FOR 1988/89

President — Alan VK1WX (Intruder Watch Co-ordinator and Property Officer)
Senior Vice-President — Ray VK1ZJR (Committee Handbook and WICEN Liaison)
Vice-President — Rob VK1KRM (Repeater Liaison)
Secretary — Alex VK1ZDX
Treasurer — Ken VK1KEN (Broadcast Manager and Membership Secretary)
Committee Members —
Neil VK1KNP (JOTA Co-ordinator and Re-Broadcast Officer)
Hank VK1HZ (Meetings Manager)
Norm VK1GN (Field Day Co-ordinator and Forward Bias Editor)
Paul VK2CJ (Recruiting)
Awards Manager — Bob VK1DE
Federal Councillor — Kevin VK1OK
FTAC Representative — Dick VK1ZAH
Historian — Ron VK1RH
QSL Bureau —
John VK1CJ (Inwards)
Ted VK1AOP (Outwards)
WICEN Co-ordination —
Dick VK1ZAH
Dennis VK1DG
Ian VK1KID
Book Sales — Eric VK1EC
Education Officer — Ian VK1ZF

MONTHLY MEETINGS

Monthly meetings of the ACT Division are held on the fourth Monday of each month. Visitors are always welcome and should make themselves known to any of the office bearers listed above.

The next meeting on June 27, will be a presentation on micro-electronics and components by Dr David Gambling, from the Department of Defence's Electronic Research Laboratory, in Adelaide. Dr Gambling is an international authority in communications and radar and it should be an interesting night.

The July meeting will be a Trash and Treasure night to be run by a man in the wrong profession — VK1RH.

DIVISIONAL BROADCASTS

The VK1 Divisional Broadcasts goes to air each Sunday evening at 8 pm, using the Divisional Call Sign, VK1WI. Frequencies are:
3.570 MHz LSB; 28.455 MHz USB; 52.075 MHz USB; 146.950 MHz FM (VK1RGI); 438.375 MHz FM (VK1RIR).

Call-backs are taken on the above frequencies at the conclusion of the broadcast. DX call-backs are particularly welcome.

Broadcasts are re-transmitted on Monday evenings at 8 pm, on two metres only. On meeting nights, the re-broadcast is on the Tuesday evening.

CANBERRA AIR PAGEANT

The annual Canberra Festival included a special air show for 1988, called the Canberra Air Pageant. The pageant was held on Sunday, March 13, at the Canberra Fairbairn RAAF Air Base and provided in excess of 10 000 spectators with an exciting series of aerial aerobatics by both military and civilian aircraft. There was also a splendid display of planes from very small ultra-lights to large commercial planes.

The ACT Division of the WIA provided VHF communications between the Pageant administrator and volunteers controlling the parking, main gates, access to the static displays and liaison with the flying displays. In addition, amateur operators provided a UHF receiver to monitor the air-to-ground radio traffic linking it to the public address system for the enjoyment of spectators.

About 20 amateurs donated equipment and time to man the eight radio links for the full Sunday Pageant. In return for their time and effort, each volunteer was given free access to all Pageant activities.

Thanks to Phil VK1PJ, for co-ordinating the WIA's amateur contribution.

ACKNOWLEDGMENTS

Thanks to Rob VK1KRM, Dennis VK1DG and Dan VK1ST for their contributions.

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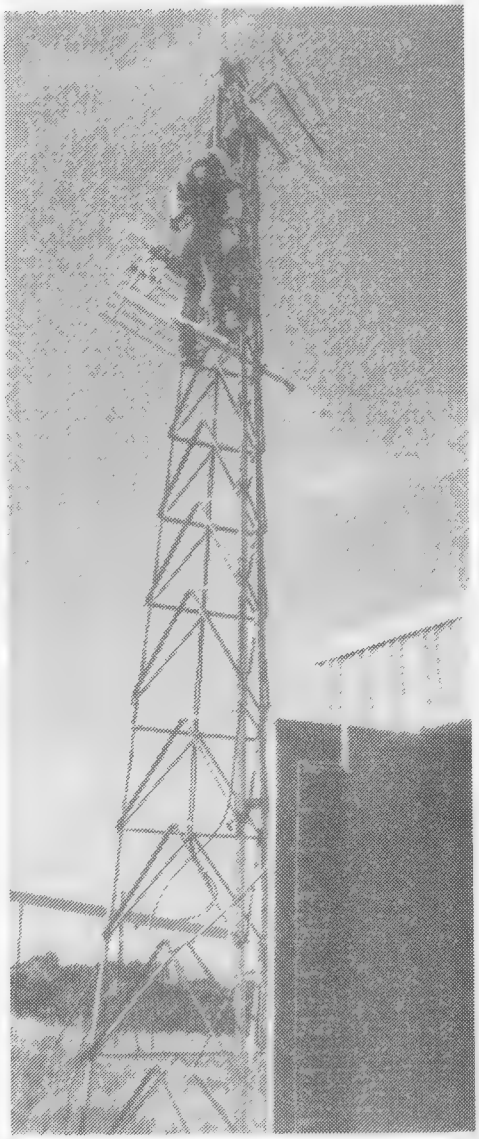

Rob VK1KRM, up the mast of the Mount Ginnini repeater, VK1RGI, attending to the antenna.

VK3 WIA Notes

WIA VICTORIAN DIVISION
412 Brunswick Street, Fitzroy, Vic. 3065

NEW MEMBERS

The Victorian Division of the WIA would like to extend a warm welcome to the following new members:
Ashley Bolton VK3NAB, Kimball Monger SWL 30121, Layton Moss VK3CLJ, Donald Stewart VK3TCH, and David Ranson VK3ECG.

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VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW. 2150

SILENT KEY

It is with regret that we have to advise of the passing on Thursday, April 14, of Divisional Councillor, Mike Burns VK2AUE. Mike had been a Councillor for many years as well as being active with the Novice Group and many Divisional committees. He assisted in many ways at the Parramatta Office, as well as the Dural broadcast team. He had only recently retired from Telecom and was looking forward to a further year on Council.

ANNUAL GENERAL MEETING

This was held on Saturday, May 7. The list of Office Bearers will be in the July issue of these notes. The posting to members contained the meeting notice, four pages of reports and a membership card. If any pages were missing, please contact the office.

BULLETIN BOARD

The Divisional Bulletin Board, on Channel 4850, is in the process of relocating the transmission point to the Dural site which will improve coverage in the Sydney region.

REMEMBRANCE DAY (RD) CONTEST

In three months it will be time again for the RD. Are you ready to take part again this year? We need your score. While on the subject of contests, the next Postcode Contest will be held on Friday evening, June 24 from 9 to 11 pm. The weekly Divisional Broadcasts will remind you nearer the date.

OXLEY REGION

The Oxley Region Amateur Radio Club Field Day, will be held over the long weekend in June, Saturday 11 and Sunday 12. Contact the club at PO Box 712, Port Macquarie, NSW. 2444 for further details.

CONFERENCE OF CLUBS

The next Conference of Clubs will be hosted by the Illawarra Amateur Radio Society Inc. It will be held at Wollongong on Saturday, November 5.

WICEN

Forthcoming WICEN events include:
The Sun-Herald City to Surf on Sunday, August 14.
The Hawkesbury Canoes on the weekend, October 22 and 23.
Few thousand bike riders from VK3 in late November, early December.

VI88NSW

Activity continues with a club a week having a turn with this call sign. By early April, several hundred QSL cards had been received, both direct and via the bureau. These, in turn, are sent to the various clubs, together with blank QSL cards for replies. Where an envelope has been supplied, they are posted direct, otherwise they are returned via the bureau.

AWARDS

By early April, the first claims were notified for several of the awards available from the VK2 Division. A full set of rules s available from the VK2 Division, Awards Manager, PO Box 1066, Parramatta, NSW. 2150. Please enclose two 37 cent stamps to cover production and postage.

On September 22, there will be a special one-day award to commemorate the 70th anniversary of the working of the first direct wireless transmissions from one side of the world to the other by Fisk, in Australia, with Marconi, in England. Further details next month.

Also, mark the calendar for November — the Parramatta Bicentenary — work VI88NSW at 10 historic sites for an award.

Finally, need cards for all those contacts? Blank cards, suitable for overprinting, are available for $6 plus postage and packaging from the Divisional Office. Designing your own and wish to use the Bicentenary logo, etc. Send a draft of your design to the VK2 Division for approval by the Bicentenary Authority.

NEW MEMBERS

A warm welcome is extended to the following who were in the April intake.
D S Cohen VK2FUF, Greenwich
R W Comerford VK2EZE, Glen Innes
R W De-La-Torre VK2BDT, Saint Clair
B J Dooley VK2KFI, Yowie Bay
J M Emery VK2MEE, Seven Hills
J L Kavanagh VK2KAV, Ryde
J G Knight VK2JGK, Kooringal
J Plecko VK2MEG, Blacktown
J Rajca VK2JRA, Mount Kuring-gai
G Robertson Assoc, Babbara
A H Steffgen VK2VAH, Mount Warrigal
C J P Verhoeks VK2FVC, Condell Park

BROADCAST TIMES

A reminder for this year that the broadcast is preceded by a historic and technical tape. Commencement times are 1045 and 1915 hours local time from AX2WI and relay stations. Copies of the taped material is available from the Divisional Office, on a C90 cassette, six segments per tape. Segments 1 to 18 are now available.

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Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA. 5039

VI88SA AT PORT ADELAIDE

One of the best Public Relations exercises that we have had for some time took place at Port Adelaide from April 1 to April 10. This was to coincide with the First Fleet re-enactment arrival in Adelaide. After dozens of telephone calls and weeks of frustration, Alan Mallabone VK5NNM, finally managed to get permission for us to have a display station on the wharf (actually the final place was in the offices attached to No 1 Shed, near the Birkenhead Bridge), very near to the ships of the First Fleet. As soon as Alan got permission, he contacted the Port Adelaide Radio Club, who agreed to help with the project. I don't think that either Alan or I should have been surprised if Port Adelaide had told us what to do with our display station. After all, they hadn't seen a WIA councillor for months (or longer) and when one did arrive he was asking for a favour! Also, they only received a fortnights notice in which to plan the event, and the original position that they were offered was only a thin partitioned wall from the rock-groups, which entertained the crowds every evening. But, like the great group of OMs that I found them to be on the three occasions that I was subsequently down there, they rallied to the occasion, got the station set up and on air, and provided more than 50 percent of the manpower (unfortunately, they do not have any YL members at present, but after the time Maria VK5BMT, put in down there, they will probably make her an 'Honorary Member'!). Hopefully, Alan or one of the other members of the Bicentennial Committee will write this up for AR, or perhaps one of the members of the Port Adelaide Club will. Suffice to say that the station attracted plenty of attention amongst the public, including many groups of school children. Hopefully, from this, the Club may have gained some new members and certainly some excellent PR in the area.

CORRECTION

Unfortunately, due to various circumstances beyond his control, John Hampel VK5SJ, will not be able to take over as Divisional Historian. Ray Bennett VK5RM, has agreed to carry on for the time being but would be pleased to hear from anyone who is interested in assisting. Ray has also suggested that several people might be interested in getting together to form a committee of historians — now, there is an interesting concept.

CLUBS' CONVENTION

Once again, a very successful convention took place two weeks prior to the Federal Convention. Unfortunately, we still have not worked out how we can get agenda items out to the clubs, when we only received some of them, both from Federal and from the clubs, only days before the event! One club actually put up an agenda item regarding this problem, but we only received it one week before hand! We were very fortunate to have Peter Gamble VK3YRP, with us on the Saturday, Not only was Peter our guest speaker on Saturday evening, but he was able to give us background information on many agenda items that arose, through his roles as FTAC Co-ordinator and as a member of Executive. I feel that many more individuals and clubs would benefit from hearing what Peter has to say, and we hope that it might be possible to have Peter at a normal monthly meeting later in the year, and perhaps video-tape it for the benefit of Country Clubs.

Clubs who were represented at the weekend were, Lower Murray, Port Adelaide, Elizabeth, Barossa, LEPARC, and we were pleased to welcome three new clubs who were attending for the first time, Moonta Scouts Radio Club, Mid North (based in Port Pirie) and the newly formed SAPUG (SA Packet Users Group).

After lunch on Saturday, Grant Troubridge VK5ZLY, gave us a brief talk on Packet Radio, its history, and how to get started. Those who wanted a practical demonstration on his mobile station (only used when stationary, needless to say!). My thanks once again to the ladies (mentioned last month) who gave us the usual high quality meals that we have almost come to expect, and also to the Council members who gave up their time and energy in various ways, to make it a success.

DIARY DATES

Don't forget the SERG Convention on the June long weekend (11-12). (See Club Corner for further information).
Tuesday, June 28. General Meeting. Speaker unknown at time of going to press. 8.45 pm.

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

Over to You!

20 METRES VERSUS PACKET

I read the letter by Keith Scott VK3SS, re the Travellers' Net (AR, April 1988) with a certain amount of dismay and concern, mainly due to the hostility he expressed towards packet radio users on the lower end of the 20 metre band.

As a regular listener and sometimes participant of the Travellers' Net, and also an avid packet radio enthusiast, I am only too aware of the problem of interference between the two systems. I can understand Keith's frustration and anger to some extent, however, I cannot condone a hostile and ignorant attitude towards any special interest amateur radio group. This sort of hostile attitude does not help solve the problem, it only compounds it. I am sure Keith probably realises this now, and is feeling a little sheepish having seen his name in print, as we all do when we 'put our foot in it"!

Sure, there is a problem, for both types of users of this piece of the spectrum. I do not know the answer, but it does seem that one group should move frequency to avoid interfering with the other. Which group should move is the question.

I know Art VK6ART, and others have been there for a long time. Art does sterling work on the net, and I for one have been very grateful for his assistance in passing messages, keeping track on car travellers around Australia, and the odd yacht or two as well. It is a wonderful net, and as a safety factor it is invaluable to all travelling amateurs, their spouses, families and friends.

On the other hand, we have the relatively new phenomenon of packet radio, wanting to use the same frequencies. Why this is so is because apparently these frequencies were chosen by overseas amateur groups who had already established their packet radio networks. It seems Australian packeteers had to follow to keep in line with international demands. Frankly, I don;t think the choice of frequencies was good. I would rather see packet up at the top end of the bands. The 50 kHz section between 14.100 and 14.150 MHz is a valuable area for low powered stations, away from the Californian Kilowatts.

It would not be so hard for either group to QSY. A little cooperation and organisation is all that is required.

Keith stated, somewhat aggressively I feel, "I would like to know just what information of significance or importance these electronic noises (from the 'Robots') are conveying, also, how can the average amateur be sure they are not commercial intruders?"

Well Keith, many of the messages passed by packet are of just the same importance and significance as much of the traffic on the Travellers' Net. One of the most wonderful things about packet is that these messages can be passed very quickly and 100 percent error-free, something that is often difficult with phone in bad conditions.

Packet is a new and wonderful technology, with amateurs again at the forefront, just like the change from AM to SSB long before the commercial users, like the early experimentation by amateurs with the first hill-top VHF repeaters, like the first amateur experiments of sending picture by wireless, now called television by the commercials, who insult our efforts in technology by feeding us nightly doses of rubbish. Hostility towards packet! I remember the same irrational attitudes back in the AM days, when a few adventurous souls had the audacity to experiment with SSB!

As for commercial intruders, I am sure there is no problem there, as each packet station sends out an identifying code with each packet sent. Any intruder using packet would be easily identified, it would be like shouting abuse on two metres and signing your call sign! I also think it will be some time before commercial users of packet start to appear, especially on the amateur bands. Most commercial radio users cannot afford to keep up with modern technology, that is why you will still find AM HF used from time to time.

Well, it is not much use butting our heads together like male mountain goats over who gets what and who. Let us solve the problem in an educated and civilised way. There is room for all of us, suggestions please!

I am a little surprised that no one has yet mentioned the other stations who use the low end of the 20 metre phone (and packet!) band. I am referring particularly to the French amateur stations in the Pacific islands who talk to their mates on adjacent islands a few dozen kilometres away. From my basic understanding of the French language, I understand many of them find it necessary to run high power and large beams. A number of them are running kilowatt stations, as attested by my collection of burnt-out front end receiver cat's-whiskers. Could someone please explain to them, that the frequency is not necessarily clear just because no one is speaking French, and that another band with must reduced power would probably be much more suitable for their requirements.

Back to packet, a suggestion to Keith and others, have a look at it, give it a try. One of the most interesting things about amateur radio is our freedom to experiment, on different modes of communication. Surely that is what it is all about, whether it be phone, CW, packet, RTTY, AMTOR, SSTV, FSTV, or what you will. But, don;t let us knock any mode in a hostile way!

Pete Robinson VK4DFR
PO Box 874
Cairns, Qld. 4870

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* * *

GOOD TO KNOW!

It was good to get the information on the RAAF Signal Group from Peter Alexander in *Amateur Radio,* February 1988.

I sometimes hear them going for their lives on their keyboards at the CW end of the bands. However, like all of us getting older, the spacing is not what it used to be in the old days, or perhaps the Radar boys "looked a lot", but did not send a lot!

Peter's photograph of the Pigeon is probably the one which sorts out the sending anyway! Good luck.

Bruce Jackson VK2DZW
Fenton Road
Narrabri, NSW. 2390

* * *

CORRESPOND WITH SOMEONE IN EDUCATION? ! ?

I am a maths teacher in a junior high school (ages 12 to 15) and am very interested in computers, education, working with youth groups and learning about Australia. I am looking for Australians who would be interested in exchanging a few letters.

I have a brother in California who is a amateur radio operator and he has told me that most of the members in his radio club are interested in computers. I have exchanged many programs and other correspondence with them. They have one of the largest Apple Computer Clubs in Orange County, California. I am hoping some radio people in Australia may also be interested in computers. (Since I work with computers in the schools, almost all of my experience is on the Apple. I currently own an Apple IIe and IIc and am considering upgrading).

Through an agricultural exchange program between our two countries, I have met some exchange students. Because of them, I have become very interested in Australia. I have plans to visit Australia one day, and would like to know some people that I could call when I go there.

I am married and have four children — daughters aged 24, 22 and 18 and a son who is 11. We live about 10 miles from town on a few acres where the children raise Hampshire sheep as a project for their youth group. The two youngest children still live at home. My daughter is also active in horse activities.

I have a bachelor's degree in mathematics and a master's degree in computers. I am interested in any area of computers — education, programming, games, etc. I would really like to find out what people in other parts of the world are doing with computers. I am also interested in comparing cultural similarities and differences. I would also love to correspond with someone in education.

Sincerely,

Marilyn Stafford
Box 217
Evansville, WY 82636, USA

* * *

SPONSORSHIP

Recently, I have had time to spare for reading over the last six months of AR. Keep up the good quality; I am not fussed about colour covers.

The reason I am writing is to say many people are genuinely in hardship and cannot afford membership of the Institute. So I propose a sponsorship scheme.

I am financially capable of supporting another fellow amateur. So are a few more. How about some thoughts back from others? Get the ball rolling, or has this been proposed before my time?

Wanting to help keep AR alive!

Greville Knight VK2FEI/JGK
HMAS Orion
Milsons Point, NSW. 2061

It is an excellent suggestion, Greville, and one that I have not seen suggested before for the WIA. There could be a few administrative problems. What do others think? —Ed.

ar

* * *

COMMUNICATION BREAKDOWN

The writer became a member of the WIA on August 31, 1987, and holds Certificate No 17628. Since that time, the journal has been enjoyed for its great articles and technical coverage. But today, a great discovery was made and I must tell about it.

The WIA does have a Victorian branch and Ray Chambers told me this morning that gross newcomers like me are able to use the library, listen to Sunday broadcasts on club affairs and participate in radio courses of instruction.

The above news came as a complete shock to me as I have been reading the journal closely for six months to try and find out how I could prepare myself for the DOC examinations. Further, I found out that slow Morse code is being transmitted every evening!

I believe a summary of all services available to new members should be sent with the Membership Certificate. Secondly, if that is not possible, then some information should be published in the journal from time to time. As for me, six months has

been lost in learning Morse and getting some instruction on radio for the examinations.

If I have missed any published information on the above matters, please let me know and accept my apology. This letter is written in a constructive way to help other new members of the WIA.

Yours sincerely,

Milton Johnson
8 Ledbury Court
Toorak, Vic. 3142

* * *

NEED FOR CW[1]

Gordon McDonald VK2ZAB, tells us in AR, March 1988, that A1 moders are nothing more than "...quaint (obsolete) old men 'playing' with Morse keys." He then follows this disrespectful reference to pioneers, alive and dead, with the comment "that the study of Morse is only a demeaning chore to be regarded as a joke" — and that it should be deleted unilaterally and immediately — no waiting for a possible WARC consensus in 1992.

VK2ZAB also informs us "that newcomers to AR ranks are falling off and we are out of touch with the latest technology".

If Gordon McDonald was code proficient, he would never have penned the above words. Deleting the Morse requirement would certainly add to our members (but not necessarily proportionally increase WIA membership above its present 45 percent). But everything has its price. History shows that cramming more stations into a limited space lowers the standard of operating — and the policing of our bands, which is abysmally poor even now, would become more difficult.

Moreover, a codeless full VK ticket is virtually useless when tendered for reciprocity overseas.

I can never understand why the 'clever' boys in AR find CW to be a 'fog in the head' when raw rookies in the Armed Services can manage 10 words per minute in as many weeks, or less.

One reason for the reduced interest in AR, referred to by VK2ZAB, is that much of the mystique has now gone from the hobby — and a leap ahead into the digital, packet,bulletin board, Satcom, mail drop technology is not likely to markedly stimulate it either. Human nature being what it is, the main body of amateurs prefer to socialize, which means a preference for voice or Morse QSO rather than the automated, depersonalised, machine-made contact.

The anti-CW lobby cannot sustain an argument for the deletion of the code requirement at this point of time. A1 happens to be on a popularity peak in many overseas countries — and the rising solar cycle will ensure that it stays that way. Instead of painting themselves as 'griping whimps', with mostly noise and bluster as a means to their ends, the lobby should get on to the right target and strive for a modified licensing structure — one that does not restrict code.

In reply to Gordon's ungracious tilt at OOTers, I would like to invite him to my shack to observe what this 'quaint (obsolete) OM can do with VK2ZAB's idea of a joke — Morse — and then have him switch to SSB for comparison.

Bi-lingual proficiency has proved to be my greatest asset in DXing.

Alan Shawsmith VK4SS
35 Whynot Street
West End, Qld. 4101

ar

* * *

NEED FOR CW[2]

The letter by Gordon McDonald expressing his view that the Morse code requirement "is seen to be an anachronism of no relevance to present day radio enthusiasts", seems to be just another example of the failure of amateurs to realise the broad picture of radio communications.

Our licence is to enable us to self-train in radio communications and to conduct technical investigations. The aim of such training must be to communicate with the highest efficiency. In order to do that we use the system which gives that efficiency, namely telegraphy. An inspection of the HF bands will reveal the extent of the use of CW by the services.

The amateur service has always been regarded by the authorities world-wide as consisting of competent radio operators, who, in time of need can be called on to augment other services.

Our frequency allocations are now under a greater threat than ever before and it is vital we present our service as having the highest status possible. If, however, we can only claim to be capable of operating telephony, the picture presented will be no more than operating a home radio telephone.

Sincerely,

Norman Richardson VK4BHJ (ex-G5HJ)
1069 South Pine Road
Everton Hills, Qld. 4053

ar

* * *

COST OF AWARDS — I PROTEST!

How many awards does one chase in the awards arena? I venture to say that the cost associated with obtaining them would be the limiting factor. Most of them are available to an amateur who does a reasonable amount of operating. But the cost; and it is here that I protest. Am I alone with these feelings?

Some time ago, reading AR for April 1987, the USSR Amateur Radio Awards caught my eye. Without any problems, I found that I qualify for five awards. Great, I will apply, so reading on to find the address and cost I suddenly lost interest. Each award cost 14 IRCs and I was seeking five, so at $0.80 (since increased to $1.35) each for IRCs I am to send $56. Highway robbery! What should an award cost? "Over to You!".

Neil Penfold VK6NE
2 Moss Court
Kingsley, WA. 6026

ar

* * *

ENJOY BEING MEMBERS

At the forthcoming Federal Convention, some of the Divisions will be trying to introduce changes which *they* believe the members should want. I hope they neglect to include the Institute journal, AR.

That publication, its member editors and member contributors is essential to the WIA. At present it is the best amateur periodical available in Australia; not because there is no competition; there is, some from overseas; but simply because it serves the WIA members very well and incidentally it also serves the rest of the amateur radio community. It does not compete on newsagent book stands or other public market places and that is how it should be.

Its prime purposes are to inform WIA members of WIA proceedings and events and to provide a vehicle for members learned discussion and the airing of opinions. It does that very well for a widely dispersed membership (even into Lakes Entrance) and without it the WIA would cease to exist as a truly national institute.

It is a non-profit publication. Its editors and contributors are unpaid dedicated amateurs who are members of the Institute. It does not need or want "trade journalists" pandering to advertisers' influence and it could and should, if the need arises, continue without revenue from advertising. It is an independent journal run by the members for the benefit of the members and, incidentally, a large proportion of non-members. Let us keep it that way and if necessary, bear the extra costs or be content with less gloss and any other necessary economies. Confine illogical 'political inputs' to the waste paper basket, suggestions such as 'amalgamation with a commercial magazine' 'sell off meeting rooms and other assets'. We can manage without those and similar measures.

An organisation, such as the WIA is, must be prepared to do what it can within the limits of its own resources and no more. It should not over commit any of its members. Above all, it should be dedicated to doing for itself the things which make it easy for the members to enjoy the pastime and *to enjoy being members.*

We hear from office bearers who admit to being over-committed and nothing from those who are, but do not complain. Are they all trying to make the WIA something it cannot be? Are they trying to provide facilities which the members do not really want or selfishly depriving members of opportunities to do interesting things for themselves? Relax chaps; I for one do not expect anyone to "burst-their-boiler" on my behalf! But if you can enjoy that, go right ahead, otherwise don't.

Yours sincerely,

Lindsay Lawless VK3ANJ
PO Box 112
Lakes Entrance. Vic. 3909

ar

* * *

WHAT AND WHAT CANNOT BE WRITTEN ON QSL CARDS

I would like to submit the following two statements and hope to draw some comment on there interpretation.

1. Under present postage regulations only five words of greeting may be written on cards sent by bulk-mail. Cards with more than five words may be returned to the sender at the outwards QSL manager's discretion.
(Extract from the official WIA (Qld) Information Booklet)
2. The old story about no more than five words on a card is a myth, via the bureau anyway.
(The above as stated inter alia in an excellent article *Memo from the VK2 QSL Bureau,* AR, March 1985, page 34.

I request that this letter not be construed as knocking our QSL managers. I personally would like to congratulate the VK4 QSL staff for their effort and dedication in performing heir duties. However, I do feel that this controversial topic should be clarified particularly for our newer members.

In conclusion, may I suggest the following:

1. Publish the postal regulation applicable to QSL bulk mailing.
2. Reprint the excellent article *Memo from the VK2 QSL Bureau.*

May I wish the magazine the very best of luck in the future.

73,

Jim McPherson VK4CBU
10 Courageous Court
Scarborough, Qld. 4020

ar

* * *

INCREASED TECHNICAL ARTICLES

It is a delight to see an increase of articles of technical and theoretical interest in AR.

In particular, Lindsay Lawless' Technicalities are most welcome. Congratulations to VK3ANJ and to AR.

His TT 2 was of great interest, so much so that I obtained a copy of the *QST* article (to which he referred) to see if I could gain any more information. It did contain interesting details on the bandwidths of the network under different circumstances; but I do not criticise Lindsay for omitting this aspect. Unfortunately, Lindsay's analysis will have been merely glanced at and then put aside by so many of our fellow amateurs.

What I like about the two articles is that they analyse, simply, the tank circuit that so many of us used in our home-brew valve transmitters of old. Take Lindsay's Figure 1a, and turn it back-to-front. The X4, X3 and X2 comprise the tank circuit that

we used to use. The only difference was that X1, instead of being tapped directly onto the coil, was usually coupled by means of a smaller coil for feeding to the antenna. (I have seen circuits without the coupling coil in old handbooks).

So; what's new?

The answer to that question is the delightful analysis of the circuit.

73,

Bob Slutzkin VK3SK
8 Lynedoch Avenue
Balaclava, Vic. 3183

ar

* * *

1 + 1

Roy Hartkopf VK3AOH, made a valuable contribution to AR with his *One plus One equals Disaster* in the April issue. It is worth commenting that a proper test for earthing of the frame of the griller, not with a test lamp but with an ohmeter, which should have shown almost zero ohms between frame and earth pin and close to infinity between earth pin and either active or neutral, would have revealed the fault. However, one does not usually expect to find one end of the element connected to a terminal marked "E" which stands for "earth" not "element"!

Having made those rather obvious remarks, I would like to endorse Roy's belief that these situations are neither random now accidental. They are man-made and flourish through ignorance enforced by political and bureaucratic stupidity. In Britain, electrical work can be done by any competent person and checked by an expert inspector. That was also the situation in VK5 until about 20 years ago.

This State had a lower per capita rate of electrocutions than all other States which required work to be done only by licenced electricians. It was not just marginally lower, but about two-thirds of the figure for the other States.

Statistics prove that accident fatalities have dropped faster in countries like the USA and Britain, where seat belt wearing is encouraged, but not enforced, than in Australia. But bureaucrats have two sayings; "Don;t confuse me with the truth — I've made up my mind" and "Shut up and do as you're told". I found that out when I applied for an electrician's licence and was told that I did not require one!

Amateur radio must be unique in that it still has a large measure of self-regulation and self-discipline. We must take care that it stays like that — or one day we may find that we are required to have an electrician's licence before we can switch on our rigs!

Yours faithfully,

P D Thomas VK5ZPT
Thomas Hill Road
McLaren Flat, SA. 5171

DEADLINE FOR AUGUST IS JUNE 20, 1988

REPEATERS & BEACONS

Tim Mills VK2ZTM
FTAC Beacon Co-ordinator
PO Box 300, Caulfield South, Vic. 3162

With the plans to change the 10 metre beacons from a continuous transmission on its own frequency to a time-shared frequency, there will be the need for a control system. It will need a clock referenced source to hold an accuracy so the transmission slot will commence precisely on its allotted minute for say the next 58 seconds. It may need a read-out and the ability to be set easily against a reference. It will need to repeat at, say, 10 minute intervals.

It may also need to be able to power step the transmitter, so this would be a signal control of say four instructions.

You may well ask, why the details? Well, a design for this type of controller is required. We may finally need six or eight controllers for this country, and perhaps a few more for the region. If you can help with either an existing design and can produce one, then please write to me at the above address. Thanks.

Whilst on the beacon subject, has your club or group considered establishing one in a remote or presently uncovered part of your State? Beacons provide a signal source for those interested in path investigation. The increasing sunspot cycle is helping the 10 metre beacons provide their role. Recent reports, particularly in *Break In* shows that 10 metres is again becoming useful. Have you looked for the Sydney 10 metre beacon on 28.262 MHz? Read its message, send a card, and you will receive one via the bureau.

ar

MORSEWORD 16

Audrey Ryan
30 Starling Street, Montmorency, Vic. 3094

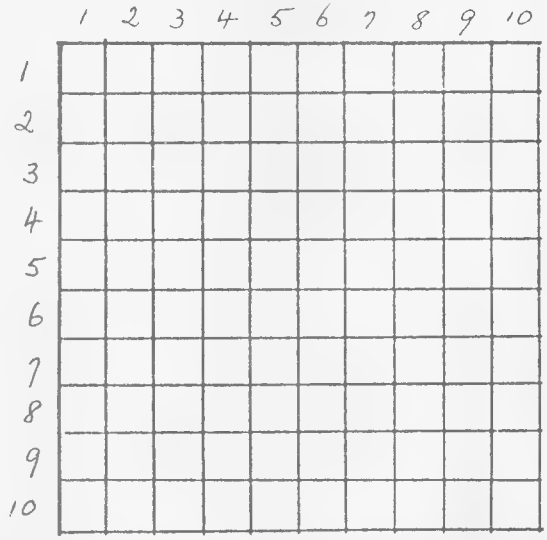
© Audrey Ryan 1988

ACROSS

1. Betray (colloq)
2. Rock
3. Anxiety
4. Animal like a rabbit
5. A good person
6. Fabric closure
7. Chilled
8. Young Arthur
9. Jabs
10. Balk

ACROSS

1. Fees
2. Basin
3. Repair
4. Donation
5. Strong wind
6. Letters
7. Santa's expression!
8. Steal
9. Cost of a trip
10. Spoken



Solution see page 62 . . .

JUST RELEASED

JUNE ETI

Starring:

★ ETI-1611 EPROM Programmer

★ Video conferencing

★ Optimising Hi-Fi systems

Plus much, much more

Silent Keys

It is with deep regret we record the passing of:

MR ROBERT HUGHES BLACK VK2QZ
MR M R (MIKE) BURNS VK2AUE
MR JOHN H W CAHILL VK6AJC
MR EDWARD WILLIAM (TED) IRWIN VK3EX

Obituaries

CARL THIELE VK3BBL

It is sad to report the death of Carl on December 29, 1987, after a short illness.

Carl was born at Gerang Gerung, in the Western District. He always had an interest in radio and in the 1930s was a keen builder and repairer of radios in his home town and surrounding area.

He was a frequent visitor at the Yanac home of Herb VK3NN (SK), his brother-in-law, and from there developed an interest in amateur radio.

Carl became an associate member of the WIA in September 1978, and after much study and help from his friends, obtained his Novice licence in June 1979 (VK3VFG) and graduated to a full call in February 1982.

Much of his time on air was spent talking on VHF to his nephews, Max and Garry VK3NN, at Yanac, and also Colin VK3ARS in Bendigo.

Sincere sympathies are extended to Carl's wife, Lorna, and sons Eric and Ian.

Bob Seal VK3RS
ar

ARTHUR STANLEY HECKENBERG VK2AHL

It is with deep regret that we record the passing of Arthur on February 19, 1988, at the age of 63.

Arthur was born in Richmond, one of twins, in a family of 13 children. He grew up and was educated in Cabramatta. He was married in Richmond in the same church in which his farewell service was held.

Arthur attained his licence in 1965, and was a very enthusiastic home-brewer, keen DXer on 20 metres and a regular voice on 40 and 80 metres. A perfectionist with his antennas, and work as a carpenter, Arthur was well-known throughout Richmond and surrounding areas as always willing and eager to help others.

Having constructed many buildings for the locals, he later worked at the St Johns Hospital, Richmond.

Unfortunately, in 1978, Arthur suffered a stroke which affected his speech and amateur radio became difficult for him. Another stroke followed which confined him to a wheelchair and Arthur became a listener only.

Sincere condolences are extended to Arthur's wife, Lilian, and daughters Kayleen and Marcel and their families.

Josef Pietras VK2AJP
ar

HARRY ALDERSON VK2EP

It is with regret that I inform all amateurs that Harry VK2EP passed away suddenly on March 8, 1988 in Baringa Private Hospital, Coffs Harbour. He will be sadly missed by all radio amateurs, especially in CW circles.

Harry's passing is also an irreplaceable loss to the Coffs Harbour and District Amateur Radio Club. He worked tirelessly within his church, community, as Morse Training Officer in the club and was a friend to all members.

A kind, patient educator, operator, and one of nature's true gentlemen, he has left a gap in amateur radio that will not be easily filled.

Harry is survived by his wife, Elva, three children and seven grandchildren, and I am sure all amateurs feel their loss.

Peter McAdam
President, CHADARC
ar

LOREN G (WINDY) WINDOM W8GZ

It is with great regret that we note the end of an era with the passing of Major General Loren G Windom (Windy) W8GZ. Windy passed away on the evening of February 1, 1988, at the age of 82. Windy's lifetime of accomplishments would fill several volumes, so we will briefly try to present the highlights of a very active life.

Windy began his radio career in 1917, with a backyard telegraph. His first radio licence, 8GZ, was issued in 1920. In 1926, at the age of 21, he established the world's "low power" record of 17 820 miles per watt, by communicating with Australian station 5BG, 10 000 miles away. The total input used by 8GZ was 0.567 watts which included the power to the filaments. An article was published in *QST* in 1929, on a single feeder Hertz antenna which has become known world-wide as the "Windom" antenna. Windy served two terms as ARRL Director in the 30s and 40s.

In 1957, W8GZ became the first amateur to contact 100 countries on SSB — his big love in amateur radio was DXing. Since 1970, W8GZ has been at the top of the DXCC Honour Roll on phone . . . the last two years by himself with the passing of Don Wallace W6AM. Windy's final country total stood at 366.

Amateur radio was not Windy's only interest. He was a practicing attorney, and served for 25 years as a United States attorney. He retired from military service as a Major General. During WWII, he received the Purple Heart with three Oak Leaf Clusters, the Distinguished Service Cross, the Silver Star and a Bronze Star. Windy also served one term as Adjutant General of the state of Ohio. Surviving him are his wife, Dottie, his son David W8ZG, and daughter Diane.

Windy's life and amateur radio career exemplified the Amateur's Code.

(Unfortunately, the Windom home in Reynoldburg, Ohio, has been sold to a non-amateur. Windy's widow's health failed rapidly following her husband's death and she is now confined to a nursing home. Thus cards of sympathy or notes would be futile.)

Courtesy N1ACH, staff of *Ham Radio* magazine, John W3AEV and Ray VK3ATN
ar

Q & A

Why the variation in membership bscriptions for the different States. I have been asked and do not know.

— Rick VK5BEG

WIA membership is made up of two components — Federal and Divisional.

The Federal Component for 1988 is $30. This covers the costs of producing, printing and posting *Amateur Radio* magazine, membership of the International Amateur Radio Union and Federal Office salaries and overheads.

Each Division determines the amount of its own Divisional Component to cover the cost of running the Division and providing its own membership services.

Your Divisional Secretary or Treasurer will be able to inform you of what your Divisional Component comprises of.

— Helen Wageningen, Membership Secretary

WHERE DO WE GO FROM HERE?

The following is an extract from the President's Report *in the Summerland Amateur Radio Club newsletter of March 1988, written by Duncan VK2DLR.*

Much has already been written and spoken about the future of amateur radio. Many press for the preservation of the past where we all feel comfortable because of the familiarity of the surroundings.

However, the past is not the future and that's where we are headed. By tradition and indeed by regulation ours is an experimental hobby. Experimentation will continue to lead us towards the unknown.

Indeed it is this spirit of adventure and desire to learn that not only forms our past but is the basis of our future.

Packet radio gives our club the biggest recruitment opportunity since CB radio. We should strive to take advantage of this opportunity to tap into the great field of computer buffs.

Not only can we appeal to their technical/experimental nature, but we can lure them with dreams of multiple connections and connection to bulletin boards and computers around the world. And all this free of Telecom charges.

Our own packet radio society SAPS and other groups are providing the infrastructure. What our club has to do is to start an educational and recruiting drive. We must attract them into the club, help them obtain their licences and get them started in our manifold hobby.

SOLUTION MORSEWORD 16

Across: 1 dob 2 stone 3 fear 4 hare 5 saint 6 zip 7 iced 8 Arty 9 hits 10 jib

Down: 1 dues 2 sink 3 fix 4 gift 5 gale 6 mail 7 oho 8 rob 9 fare 10 said

	1	2	3	4	5	6	7	8	9	10
1	—	•	•	—	—	—	—	•	•	•
2	•	•	•	—	—	—	—	—	•	•
3	•	•	—	•	•	•	—	•	—	•
4	•	•	•	•	•	—	•	—	•	•
5	•	•	•	•	—	•	•	—	•	—
6	—	—	•	•	•	•	•	—	—	•
7	•	•	—	•	—	•	•	—	•	•
8	•	—	•	—	•	—	—	•	—	—
9	•	•	•	•	•	•	—	•	•	•
10	•	—	—	—	•	•	—	•	•	•

IONOSPHERIC REPORT

The IPS Radio and Space Services summary contains the following information. The monthly averages were:
10 cm flux — 108.9
Sunspot number — 59.6
A index — 10.3
I index — 63.4
Flares — 3

Solar activity was low in January with an exception of an X class flare on January 2, and two M class flares on January 14. The X class flare came from a region which had threatened energetic flares in late December, but did not produce anything until the January 2 flare.

The monthly averaged 10 cm flux value was the highest since May 1984, continuing the rapid rise of the new solar cycle. The daily flux value of 127 on January 16, was the highest single daily value since May 23, 1984.

The geomagnetic field was at major storm level on January 2 and 3. There was a sudden commencement in the field at 2012 UTC on January 4. Another disturbance started after 1500 UTC on January 6, and ended slowly on January 8. There were minor storm conditions from 0900 to 1300 UTC on January 12. There was sudden commencement at 2328 UTC on January 13. The field continued to storm to 1200 UTC on January 15. The second half of the month was remarkably quiet with the largest A index being only 10.

HF propagation for Sydney was generally good because of the strong solar flux values throughout the month. MUFs were affected by the geomagnetic disturbances in the first part of the month, especially the January 14 to 15 disturbance.

The sun's activity dictates the conditions in the sun-earth environment. This activity is responsible for the emission of the extreme ultra-violet and Xray radiation, the ejection of energetic particles and clouds of solar material which perturb the earth's ionosphere and magnetic field. Such perturbations subsequently disturb radio communications and the earth's environment.

The summary for February contains the following information. Monthly averages were:
10 cm Flux — 105
Sunspot number — 40.2
A Index — 11.2
Flares — 1

Solar activity for February was low with the exception of a single M class flare on February 20. There were a number of regions visible on the disc of the sun during the month. One of these was quite impressive in size from being the first visible on the eastern edge of the sun on February 12. It remained this size until it crossed the western edge of the solar disc on February 26, but did no look likely to produce energetic flares at any time. The fade out from the Class M flare occurred on February 20, with the fade out possible 0402 to 0445 UTC.

In respect to geomagnetic activity, the feature of the month was the intense magnetic storm centres on February 22. The A index for the day reached a value of 67 which was the highest daily value since the start of the solar cycle 22, indeed since the remarkable storm of February 8, 1986. There was a report of an aurora being sighted at around 1710 to 1750 UTC on February 22, from the Siding Springs Observatory, in the central-west of New South Wales. Geomagnetic disturbances occurred on February 5, 12-13, 15, 18, 21 and 23 when a major geomagnetic disturbance started around 0000 UTC, on February 22, and the field was at major storm levels throughout the day. The intensity of the storm then abated slowly on February 23.

Sydney MUFs were considerably higher than IPS predicted values during the middle part of February 5. They were then severely depressed from 210 on February 5, to 1000 UTC. They were again moderately depressed from 2100 on February 6, until 0600 UTC on February 7. MUFs in Sydney were severely depressed from around 2200 UTC to February 21 through the daytime hours of February 22 and 23, when conditions were likely to have been extremely poor due to the intense geomagnetic storm and on February 29 conditions were moderately depressed for most of the day. The two largest geomagnetic disturbances during the month both affected the ionosphere badly at times, February 22 being especially poor.

VK2QL's Radio Australia propagation report shows 20 flares occurring during March.

For those readers with general coverage receivers, Radio Australia gives a propagation report each four hours daily, except Sundays, commencing at 0425 UTC on the frequencies of 15.320 and 11.945 MHz and at 0825 UTC on 9.580 MHz.

—Contributed and compiled by Frank Hine VK2QL

AMSAT Australia

SATELLITE ACTIVITY FOR THE MONTHS OF JANUARY/ FEBRUARY 1988

1 LAUNCHES

The following launching announcements have been received:

INTL NO 1988	SATELLITE	DATE	NATION	PERIOD min	APG km	PRG km	INC deg
004A	Cosmos 1915	Jan 26	USSR	90.3	402	207	r172.9
005A	Meteor 2-17	Jan 30	USSR	104.1	973	947	82.5
006A	USA 29	Feb 03	USA	101.5	832	824	98.8
007A	Cosmos 1916	Feb 03	USSR	89.9	384	179	64.9
008A	USA 30	Feb 08	USA	90.1	333	223	28.6
009A	Cosmos 1917	Feb 18	USSR				
	Cosmos 1918	Feb 18	USSR				
	Cosmos 1919	Feb 18	USSR				
		Failed to reach required orbit					
010A	Cosmos 1920	Feb 18	USSR	88.8	268	193	82.6
011A	Cosmos 1921	Feb 19	USSR	90.4	408	215	70.2
012A	CS-3A	Feb 19	Japan	650.0	36755	200	28.3

2 RETURNS

During the period 51 objects decayed including the following satellites:

1984-083A	Cosmos 1588	Feb 17
1986-059A	Cosmos 1769	Feb 18
1987-102A	Cosmos 1901	Feb 03
	Cosmos 1917	
1988-009A	Cosmos 1918	Feb 19
	Cosmos 1919	

—Contributed by Bob Arnold VK3ZBB

All copy for inclusion in the **August 1988** issue of *Amateur Radio,* including regular columns and Hamads, must arrive at **PO Box 300, Caulfield South, Vic. 3162,** at the latest, by **9 am, June 20, 1988.**

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write ***each*** on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. ***Please do not use scraps of paper.***

- Please remember your STD code with telephone numbers
- Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to ***Box 300, Caulfield South, Vic. 3162***
- Repeats may be charged at full rates
- QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows:
$22.50 for four lines, plus $2.00 per line (or part thereof)
Minimum charge — $22.50 pre-payable
Copy is required by the Deadline as indicated on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price list send 105 x 220 mm SASE to: **RJ & US IMPORTS,** Box 157, Mortdale, NSW. 2223. (No inquiries at office please . . . 11 Macken Street, Oatley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT. (Please note that the R J and U S Imports Office will be closed during the month of June).

WANTED — ALL STATES

THE MAX LOVELESS COLLECTION: is most anxious to obtain a "Type A-Mk2" or similar WWII era clandestine operations radio set. Also: Bendix TA 12 HF transmitter. AT20 or WS 173 HF transmitter. WS 133 HF transmitter. These items are required for restoration & preservation by the Loveless Memorial. We are prepared to pay reasonable prices for such or similar gear, but we cannot afford "antique dealer" prices. If you can help with any of the above please contact Barry VK7RS, QTHR. Ph: (002) 28 6351 BH. Mail address: GPO Box 215C, Hobart, Tas. 7001.

WANTED — NSW

EARLY WIRELESS SET: Any condition, crystal set, early valves, 20s radio parts, Wireless Weekly magazines or similar, telephone bits & pieces. Bob VK2DWA. Ph: (02) 620 1635.

KENWOOD LINEAR AMP: TL922 or similar unit. Ph: (049) 59 6335 anytime.

WANTED — VIC

HANDBOOK OR CIRCUIT DIAGRAM: for Eddystone receiver type S870. Cost etc to John Weir VK3KMW, 198 Deakin Avenue, Mildura, Vic. 3500. Ph: (050) 23 7252.

OPERATING MANUAL: for "Galaxy V" transceiver. F Maher. Ph: (03) 354 9329.

WANTED — QLD

ANTENNA TUNER AT-130: Must be in VGC & 100 percent operational. Icom IC-22S/22A in VGC. Must be 100 percent operational. Hy-Gain 18AVT or similar trapped vertical HF antenna in VGC. Please phone Geoff VK4CET (077) 73 7179 & leave your phone number for contact.

HUSTLER 5BTV VERTICAL HF ANTENNA: Watt-meter. Also, mike/earphone headset. Details to John VK4SZ, QTHR. Ph: (070) 61 3286.

WANTED — SA

VALVES: Old valves 2A5, 2A6, 57 (2), 58, 6U7, in good order. Also, one 5 inch Electrodynamic Speaker, 1000 ohm coil. David VK5NCM/KDE, QTHR. Ph: (08) 389 2362.

WANTED — WA

ICOM IC-720A: Will pay top price for set in good cond. Call on reverse charge. Emanuel VK6NEB. Ph: (09) 276 2207 evenings.

SWAP

YAESU SPEAKER MIC: with scanning & frequency lock, type YM-49 — for a Kenwood speaker mic to suit Kenwood TR-2400 2-metre transceiver. VK3CXP, QTHR. Ph: (03) 366 5060.

FOR SALE — NSW

HY—GAIN MULTI-BAND VERTICAL ANTENNA: 10 to 80 metres. $95. Mosley Mustang 3 el beam, 10, 15 & 20 metres. $80. For linear amplifier builders, quantity of valves, type 813. Al VK2AXR. Ph: (02) 477 6275.

KENWOOD TR2600A 2M FM HAND-HELD: with speaker-mic, extra PB26 battery pack. Rubber flex antenna, AC charger, manual. $150. Allan VK2ELE, 9 Loquat Avenue, Leeton, NSW. 2705. Ph: (069) 53 3756.

METERS: 1 x Weston Model 301 0-25mA DC. 3" round-new. $30 ONO. 1 x 0-250mA DC 3" square. $25 ONO. 1 x 0-100V AC non-linear scale. 3" round. $15 ONO. 1 off CDE model AR22 rotator with control. Suit small HF beam.$175 ONO. 1 off Autronic (USA) Morse key — new. suit electronic keyer. $45 ONO. Art VK2AS, QTHR. Ph: (02) 467 1784.

ROBOT 400 RTTY/ASCII/MORSE & SSTV TERMINAL: complete with all documentation and in good working order. $250. Mactrotronics RM1000 radio modem, complete with interface card for IBM PC or compatible & software for RTTY/ASCII/Morse. Modem is software controllable for all common shifts & CW. Complete with all documentation & disc. $300. VK2HL. Ph: (02) 981 4762 for further details.

SIEMENS TELEPRINTER: with opto-coupler interface to Apple computer. Prints program listings, etc. $65. Unmodified Siemens good order, with free 'spare' machine $25. Roger VK2AIV, QTHR. Ph: (042) 34 1431.

VZ300 & DATASETTE: 16k expansion module, glass RTTY, expanded Basic, Tech manual, Morse keyboard program, 8 games, speech processor, pwr supplies, cables & plugs. $300. Allan VK2AGR, QTHR. Ph: (044) 71 1059.

YAESU FT-100: VGC $125. ACU Yaesu FC-700. $200. Carton of valves all kinds. Valve tester. Data of valves. Offers? FTDX-400 (Serial No 805452) GC. $150. FTDX-400 (Serial No 9062244) could be suitable for parts. RX Okay. TX no. Offers? Trio CS-1554 dual trace oscilloscope. Only used 3 times. GC $250. (Licenced amateurs only). VK2DJM QTHR. Ph: (075) 36 5868.

YAESU FT-101B: CW, xtal filter, & G3LLL clipper installed. Manual, mic, 240/12 volt leads, original PA tubes. (also a new spare set) plus outboard SX59 preselecter. No modifications. $400. VK2YN. Ph: (046) 77 1842.

FOR SALE — VIC

BEARCAT DX-1000 HF RECEIVER: 10 kHz to 30 MHz, AM/SSB/CW. Three selectivity filters (12-6-2.7 kHz). Dual clocks, memory, three event timer. Keyboard or dial tuning. Mains or battery power. Very good condition. $500 includes postage & packing. John Abrim, 11 Halpin Crescent, Shepparton, Vic. 3630. Ph: (058) 21 0846 after 5 pm.

COLLINS KWM2 HF TRANSCEIVER: with PM-2 power supply in original unmodified condition. $950. MFJ-525 RF speech processor. $80. David VK3BFB. Ph: (03) 587 1593.

DECEASED ESTATE: Yaesu FT290R all-mode 2m tcvr. $350. Yaesu FC-102 1.2 kW aerial tuning unit. $250. Assorted lengths of RG8 & RG59U coax cable. Some terminated at both ends. RG8 $1.50 per metre. RG59U $0.75 per metre. Slim Jim antenna for 2m. $10. Lowpass filter, Cabena $10. Morse key, Himound. $40. World clock, Seiko. $15. Dick Smith extension speaker in box. $7. National 8 ohm stereo headphones. $10. Peak multimeter $5. Prices as stated, but make offer for any or all if it. Contact Frank VK3EV. Ph: (03) 878 7157.

IC-551 ALL MODE 6M TRANSCEIVER: including IC-SM2 desk mic. Manuals & original packing $575. Roger VK3XRS. Ph: (051) 56 8291.

IC-701 TRANSCEIVER: with mic & remote control unit. $500. Fred VK3BQA. Ph: (03) 439 2545 AH.

KENWOOD STATION MONITOR: Model SM-220; Monitorscope + Oscilliscope with two-tone audio generator. As new. $485. Walter VK3DFO, QTHR Hawthorn. Ph: (03) 817 4149 AH or (03) 818 4976 BH.

MICROPROCESSOR DEVELOPMENT SYSTEM: 6801, 6809, running flex, 15 M-Byte hard disc, twin 5.25 floppys, Beehive ATL004 terminal, printer LA180 132 column, EPROM programmer. Software includes Fortran, various assemblers, Stylograph word processor, etc. Spare ribbons & circuit. Cards, manuals, cables, all working. Prefer to sell as is, but will separate. $2400. Graham VK3KOA, QTHR. (03) 561 7011 BH or (03) 45 1731 AH.

TOWER: 80 foot crank-up tower in excellent condition. $650. CE35DX 5 element triband beam 10/15/20 $230. Siewa SV230 13 channel 2M FM transceiver 30/5 watts $80. Model 15 teleprinter with power supply complete with full manuals & home-brew modem. $50. Erik VK3AKJ, QTHR. Ph: (03) 756 6958.

TRAPPED VERTICAL ANTENNA: Chirnside C-5B 80 to 10 metres. As new. $100. VK3CAY, QTHR. Ph: (03) 398 2714.

VHF FILTER UNIT: AEA 1P4-145, 144-174 MHz, 20 dB (min) attenuation at unwanted freq. 250 W (max) fitted with type 'N' sockets. Suitable for 2m repeaters. $125. UHF mobile, Philips FM747, 10 ch 15W FM, fitted with 5 rptr & 1 simplex. Remote handset, installation cradle & manual. $220. 2m SSB tcvr, solid state home-brew, digi dial, 12 VDC. 10-15W PEP output. 144-145 MHz. Professional appearance & performance. Top quality components. $220. Mobile mount bracket, Yaesu, hump or dash mounting FT101 etc. Brand new in box. $20. Mobile mount bracket, Kenwood MB100 for TS120/130. Brand new in box. $35. Digi clock, Copal Quartz, QG-870 24-hour, batt operated. 300 x 150 mm. $45. VK3ADM, QTHR. Ph: (03) 592 2168.

FOR SALE — QLD

6M & 2M HENRY 1 kW LINEAR: Model 6N2 240 volts AC pair of 8874 tubes. $1500. Robot Keyboard RTTY, ASCII, CW & SSTV character generation. $350. Write to VK4TL, QTHR or Ph: (070) 54 3677 AH.

BARGAINS: Quality test equipment must be sold. Marconi TF995A/5 1.5-220 MHz FM/AM/CW sig gen $250. Marconi TF144H/4 10k/72 MHz $100. Metrix 931H 50k/50 MHz $100. Ratcliffe 205 45/180 MHz $50. Airmec CT212 85k/32 MHz $40. Hewlett Packard 5245L 0/500 MHz freq counter $250. Takeda Riken Ditto $250. Gertsch 20/1000 MHz freq measuring meter $50. Marconi Picture Monitor $25. Valves, transformers, mags, etc. Will swap for tx/rx. Bob VK4OY, QTHR. Ph: (07) 396 0886.

IC-730 MATCHING POWER SUPPLY MOUNTING BRACKET: Good condition. $950 negotiable. Kevin VK4VKX, QTHR. Ph: (074) 22 3228.

OSCILLOSCOPE: True Double Beam, Telequipment D31. 2 vert amps, DC to 6 MHz, 9 ranges from 0.1V per cm. Timebase 18 ranges from 1 microsec per cm. Comprehensive triggering, 3 inch screen, illuminated graticule. Well maintained, with users/maintenance manual & 2 home-made x10 probes, $150 ONO + freight. Dennis VK4ADY, QTHR. Ph: (071) 86 4492.

RECEIVER: Valve, Drake R2B w/manual. Full coverage capability. 50 kC IF with steep-sided LC filter. (Excellent for CW). Sensitive. $180. John VK4SZ, QTHR. Ph: (070) 61 3286.

TAXAN RGB COLOUR MONITOR VISION I: Compatible with IBM-PC, NEC-PC, Apple II & III computers VGC. Apple interface card included. $250 ONO. Tower 33 foot triangular steel. 3 foot base. Strong. Thrust bearing included. Cheap & located in Brisbane area. Geoff VK4CET. Ph: (077) 73 7179 for details.

YAESU FL-2100Z LINEAR AMPLIFIER: in good condition. $950. Reply to Jim VK4FAL. Ph: (071) 21 4010.

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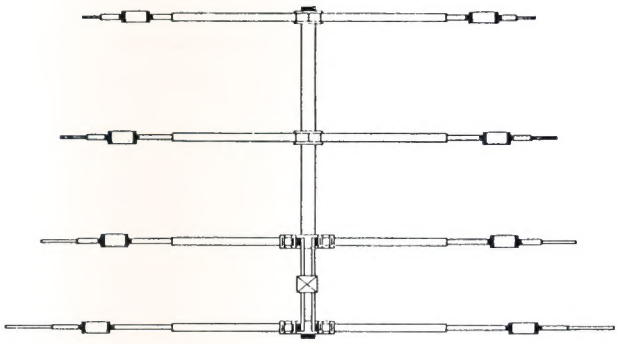
Made in Australia TET-EMTRON ANTENNAS

Dr MAC TANIGUCHI of TET Japan has now joined EMTRON INDUSTRIES and improved his already famous "phase-feed" matching system based on the "HB9CV" concept. This new matching system provides an increase in gain, roughly comparable to adding another element to the antenna, while significantly improving the front to back ratio. The performance exceeds even conventional YAGI-UDA design and these new TET-EMTRON multiband beams exhibit extremely flat VSWR over a wide frequency range.

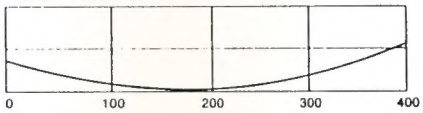
Our new antenna factory "TET-EMTRON" a division of EMONA ELECTRONICS is now producing a range of antennas aiming specially at the export markets of Japan, U.S.A. and Europe.



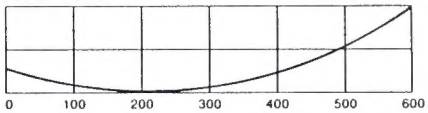
SPECIFICATIONS:

	HB33DX	HB43DX
Frequency	14/21/28 MHz	14/21/28
No of Elements	3/3/3	4/4/4
Gain (dBd)	8.5/8.7/8.3	9.4/9.5/9.8
F/B Ratio (dB)	22/24/21.5	24/24.7/22
VSWR	1.5 or better	1.5 or better
Power Rating	2 kW	2 kW
Impedance (ohm)	50	50
Element Length (metre)	8.25m	8.25m
Boom Length (metre)	4.0m	6.0m
Turning Radius (metre)	4.54m	5.1m
Wind Surface Area (m²)	0.58m²	0.74m²
Wind Load (EIA STD 80 MPH)	56.7 kg	72.7 kg
Weight (kg)	15 kg	19.2 kg
Price	$449	$549

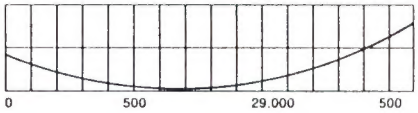
14 MHz VSWR 1.5



21MHz VSWR 1.5



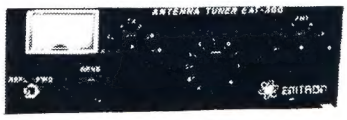
28 MHz VSWR 1.5



NEW 1KW EMTRON TUNER EAT-1000A Only $549

NEW 300W EMTRON TUNER EAT-300A Only $349

OVER 1000 FAMOUS EAT-300 SOLD



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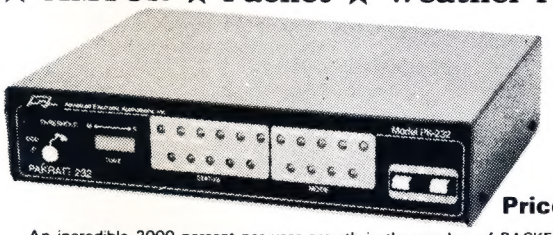
A new software enhancement makes the AEA PK-232 the only amateur data controller to offer six transmit/receive modes in a single unit.

★ Morse Code ★ Baudot (RTTY) ★ ASCII ★ AMTOR ★ Packet ★ Weather FAX



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NEW PACKRATT PK-232 — Morse, Baudot, ASCII, AMTOR, and packet data controller in stock now! This six mode machine goes with any RS232 computer or terminal. Call for full specs.

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Software Enhancements

★ AEA's exclusive "MBX" Mailbox Monitor command lets you read and save received data without confusing headers, callsigns, or repeats ★ New commands let you restrict the use of your station for connects and digipeater functions ★ Host mode for improved terminal program operation and development of specialized programs and applications ★ Compatible with existing WORL1/WA7MBL PBBS/Mailbox/Gateway programs, with complete software command for remote selection of link rate, modem tone, etc ★ Autobaud routines for terminal data rates from 300 to 9600 baud (programmable down to 45 baud), and software control to set on-air data rates from 45 to 9600 baud. While the PK-87 can be used for HF operation, AEA recommends the PM-1 packet modem as a high performance front end for best results in HF packet service. Only the new AEA PK-87 has all these features. Contact your local AEA dealer and join the packet revolution today by ordering the new PK-87.

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HAYMARKET, NSW.
2000

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FAX: (03) 670 0671

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THIS SCREEN CAN TELL YOU AS MUCH ABOUT THE IC-781 AS WE CAN.

The huge CRT display on this new HF transceiver will show at a glance all the functions we're about to describe here.

That's because it has a built in spectra scope for the first time, for programmable, multi-functional central monitoring.

Plus there's a VFO, A/B contents, memory contents, two menu screens, band scope, and 15 operational screens.

It also has a sub display, and its DDS system offers a lock-up time of just five milliseconds. So it's ideal for data communications systems like PACKET and AMTOR.

The dual watch function is a huge advantage on DX-peditions or when chasing DX-stations. And its computer-controlled twin PBT with high efficiency IF filter eliminates interference.

Maximum frequency stability is achieved at ±15Hz (0-50°C), which is more efficient than other transceivers on the market.

Also, the delay control noise blanker system is adjustable by up to 15 milliseconds.

There's a full and semi break-in function that can output up to 100 words per minute. And a p.a. unit that outputs 150W of power.

However, just because the IC-781 has so many state-of-the-art features, don't think ICOM haven't made it simple to use.

There is a built in 10-keyboard for easy operation. Or you can use the built in remote control communication interface-V system.

This lets you control your transceiver via a personal computer or other compatible equipment. Plus you have a 2 way sleep timer, and 5 separate automatic weekly timers.

For your nearest ICOM stockist, just call (008) 33 8915. And they'll tell you everything you need to know about the IC-781. Then once you've got one, the CRT display will tell you everything you need to know about what it's doing.

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